

Recognition of the D.D.S. Degree by the American Medical Association.

By EUGENE S. TALBOT.

It will be of interest to the dental profession to know that the American Medical Association has recognized the degree of D.D.S. One object of the establishment of the Section on Stomatology in the American Medical Association was to try to place dentistry on an equal standard with other specialties in medicine. The members of the Section have labored many years with this idea for a goal. Members of the Association have been the warmest friends from the beginning.

The members of the Section have as their battle cry "By their works ye shall know them," and for each meeting a programme has been prepared far above the average dental society programmes. Subjects have always been chosen of mutual interest to physicians and dentists to the exclusion of dental technique, since there are many dental societies in which subjects pertaining to dentistry proper are discussed.

When the Section was first organized only those holding the M.D. degree could become members. Later, in June, 1887, Dr. N. S. Davis, Dr. W. W. Allport and myself drew up the following:

"Resolved, That the regular graduate of such dental and oral schools and colleges as require of their students a standard of preliminary or general education and a term of professional study equal to the best class



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of the medical colleges of this country, and embrace in their curriculum all the fundamental branches of medicine, differing by substituting practical and clinical instruction in dental and oral medicine and surgery, be recognized as members of the regular profession of medicine and eligible to membership in this Association, on the same conditions and subject to the same regulations as other members."

While this practically recognized the D.D.S. degree, yet the wording of this resolution was so ambiguous that every year the officers of the Section had more or less trouble in admitting members. Thus at Denver, for some reason unknown to the writer, an edict was issued before the meeting that only those holding the M.D. degree could become members; some thirty members were thus lost the Association. This was unintentional, as it was admitted by the secretary and treasurer after the meeting to have been a mistake.

The Section has drifted along under the resolution until 1901, when a new constitution and by-laws were adopted which placed our Section to a greater disadvantage. In the meantime, the Section, by the character of its papers and discussions, had placed itself upon an equal standard with other Sections. Nay, more; it has in some respects far superseded the other Sections. The Section on Stomatology has been frequently cited in the past ten years as a model which other Sections, to be successful, might copy, as witness the following remarks by President Billings at New Orleans: "One of the best conducted Sections of the Association is that of Stomatology. Its efficient secretary has served continuously for sixteen years. This Section is threatened with annihilation, since the plan for re-organization was adopted. This should be obviated by the adoption of the by-law proposed last year which will enable the reputable dentists who have a degree of D.D.S. to become associate members of the Association."

Noticing the predicament and recognizing the high standard of the work of the Section on Stomatology, the Association came to the rescue and passed the following resolution through the House of Delegates: "Dental Members.

Dentists who hold the degree of D.D.S. from a reputable dental college and who are members of a recognized local or State dental society may be admitted as dental members on recommendation of the officers of the Section on Stomatology and approval by a majority vote of the Section, the names of such members to be sent by the secretary of the Section.

By-Law,

Dental members shall enjoy the same privileges as regular members and be subject to the same conditions."

It will be seen that not only is the graduate of dentistry placed on an equal standard with the graduate of medicine, but the Association has given the Section on Stomatology great privileges as well. It has given it its own autonomy. This relieves the officers of the general body, as well as those of the Section, of some of the annoyance which naturally occurred under the old regime. The D.D.S. pays his \$5 and receives the weekly journal of the Association, which every practitioner of dentistry or medicine should take.

It has been claimed by some dentists that the medical profession has been hostile to dentistry. While it is possible that such may be true in certain localities and of some individuals, it is not true of the members of the American Medical Association. When the Section was established at Richmond, Virginia, in 1881, Drs. Samuel D. Gross, of Philadelphia; Sayre, of New York; N. S. Davis, of Chicago; Toner, of Washington, were heartily in sympathy with the movement and took active interest in its welfare from the start. Later Dr. Marcy, of Boston, not only worked for its interest but read papers before the Section. It is a well-known fact that these men are all ex-presidents of the Association. The dental profession has no better champions than the present temporary and permanent officers of the association.

The secretaries from the start have always stood by the Section on Stomatology. Dr. Simmons, the present permanent secretary has championed our cause through the present trouble. He is a warm friend of the Section and always speaks in the highest terms of our work.

I think it safe to say there is not a member in the Association who would not gladly read a paper before our Section upon invitation. We have had many such papers in the past. There has never been the slightest distinction made between the Sections. The Section on Stomatology has as much influence as any other Section.

It has been the aim of the Section to elevate the standard of dental education and its influence has been felt in universities, in the advancement of their years of study, preliminary education, ground work in medical principles, in the passing of the Army Medical Bill and the establishment of the Army Dental Corps.

Our numbers have not been large as compared with other national bodies. As compared with other Sections in the national body, with the exception of possibly three, we stand very favorably. There is one great advantage, however, in this; when one reads a paper before the Section on Stomatology upon any subject, he is sure of an appreciative audience. Every person in the room is capable of discussing these papers to the fullest extent.



The Electrolytic Migration of Remedial Agents.

By H. L. BANZHAF, D.D.S., Milwaukee.

It may safely be asserted, without fear of contradiction, that cataphoresis wherever its use is indicated, does relieve pain, and particularly the kind of pain dentists are called upon to inflict.

Candor nevertheless compels me to admit that until quite recently this method of producing anæsthesia of the pulp and tooth structure was unpopular with a great many good operators. A change of sentiment, however, has come over the professional mind within the last year or two, and this change in favor of cataphoresis is without doubt the direct result of the work of some of our most scientific and earnest thinkers along this particular line—notable among them Dr. Weston A. Price.

The question, "Why have there been so many failures?" is naturally asked. Time forbids a detailed answer to this question, but briefly stated the cause of failure may be found in one of the following reasons:

First—A lack of thorough knowledge of the principles involved in electro therapeutics and electro chemistry.

Second—Defective apparatus.

Third—Imperfect insulation.

Fourth—Faulty application of the current.

The subject is too vast to treat adequately in this limited discussion. I will therefore confine myself more or less rigidly to the first reason enumerated, and shall endeavor to state briefly the accepted theory of cataphoresis, an understanding of which I believe is necessary for an intelligent study of the subject.

In considering electrical conductors we find first
Types of Conductors. of all that they are divided into two classes, depending upon their chemical behavior in the passage of the electric current, viz.:

Conductors of the first class, or metallic conductors, which are not chemically decomposed by the passage of the current. Metals and carbon belong to this class.

Conductors of the second class, which carry the current with simultaneous decomposition. To this class belong the salts, bases and acids, fused or in aqueous solution.

Substances which conduct electricity in this manner are called "electrolytes," and this kind of conductivity is called "electrolytic conductivity" in contrast to the metallic conductivity of the first class of conductors.

The process of decomposing electrolytes chemically by passing an electric current through them is called "electrolysis."

The primary action of the electric current on the electrolyte is that the molecule of the dissolved substance is split into two parts. These primary decomposition products are called the ions. For example: if an electric current passes through a solution of salt (NaCl) the molecule of the salt is decomposed into two ions, sodium and chlorine. One of the ions is attracted by the positive pole, moves towards the same and is therefore charged negatively. The other ion is attracted by the negative pole and is therefore charged positively, because opposite electrifications produce attraction.

The electrolytic decomposition of the salt can be demonstrated by the following equation:

NaCl equals $\text{N} + \text{a} + \text{C} - 1$. Hence by the electrolytical conduct of a solution all molecules of the dissolved substance are gradually split into positive and negative ions, which move through the liquid to the opposite pole. This motion of the ions toward the opposite pole is called migration of ions. The liberated ions are set free at the attracting pole, either as such, or they may undergo secondary chemical processes by being further broken down chemically, or by uniting chemically with the solvent. Later experiments have shown that the decomposition of chemicals into ions is not only produced by passing an electric current through them, but it has been demonstrated to a certainty, that many chemicals when dissolved in water are broken down. The conclusion that water has the property of decomposing these chemicals when they are dissolved in it in an analogous manner to electricity was first suggested by Arrhenius in 1887, and shortly afterwards by Plauk. This theory has been adopted as the base of our modern view in regard to aqueous solutions, and is called the Arrhenius theory.

**Hydrolytical
Dissociation.**

The decomposition of substances when dissolved in water is called hydrolytical dissociation, but it must be borne in mind that not all substances soluble in water are hydrolytically dissociated. For example sugar dissolved in water does not undergo hydrolytical dissociation.

By comparing the substances which undergo hydrolytical dissociation with those which undergo electrolytical dissociation, we find that both are identical; both are obeying the same laws. The molecules of an electrolyte when dissolved in water are broken down to positive and negative ions; hence when salt is dissolved in water, the solution contains positive sodium ions and negative chlorine ions. It is therefore reasonable to conclude that both kinds of dissociation are in reality the same.



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The hydrolytical dissociation of a substance by being dissolved in water does not take place in all molecules at once, but increases with the quantity of water which is added, and is theoretically only complete when the quantity of water added is infinitely larger in comparison with the quantity of the substance dissolved. Therefore, if a very dilute solution of the electrolyte which is almost completely dissociated into ions is evaporated, the ions are gradually reunited, and this process is completed when all the water is evaporated.

According to the foregoing statements, the process of an electric current passing through an aqueous solution of an electrolyte can be explained as follows:

The aqueous solution of the electrolyte is split
Action of Current. by hydrolytical dissociation into two kinds of ions, some being charged with positive and the other with negative electricity. If then the poles of an electric battery are dipped into the solution the migration of the ions commences; the positive ions moving to the negative pole and the negative ions to the positive pole, where they are set free as such or undergo secondary chemical changes.

The animal body, as every one knows, is also a conductor of electricity; but the conductivity of the animal tissue is not of a metallic but of an electrolytical nature, every cell of the body being filled by an aqueous liquid which contains substances (salts, etc.) dissolved.

Now if we place the two poles of an electric
Osmosis. battery on two different parts of the body and pass an electric current through it, it is evident that the same process first described will take place; the electrolytes split into ions which commence to migrate through the body, until the positive ions reach the negative pole, and the negative ions, the positive pole. It therefore becomes at once apparent that in doing so the ions are obliged to pass through the cell walls, when migrating from one cell to another, and such motion of dissolved particles through a porous membrane is called osmosis. Hence in order to migrate to the opposite poles, the ions must undergo osmotic processes by passing through the cell walls when moving from one cell to the other.

In order to demonstrate the migration of ions through animal tissue, aniline dyes can be used to advantage, for the reason that they can be easily observed during their migration on account of the intensity of their coloring action. These dyes are salt-like compounds, the coloring part of which is sometimes the acid (as in eosin) and sometimes the basic radical (as in methylene blue). An aqueous solution of the first class of aniline dyes contains the color as negative ions, that of the second class contains the color as positive ions.

In further proof of this theory, suppose we make the following experiment with methylene blue, which is the chloride of a coloring base. By dissolving it in water it breaks down into ions, the negative chlorine ions being colorless and the positive being methylene blue ions.

We place the negative pole of an electric battery somewhere on the body, while the positive pole is dipped in the solution in which also a finger is dipped. The negative chlorine ions will at once commence to migrate to the positive pole which is in the liquid, while the coloring positive ions migrate to the negative pole, but in doing so they must pass through the cell walls of the finger and by osmosis from cell to cell the nearest way to the negative pole.

Cocaine This migration of the ions will result in colored
Hydrochlorate. spots and lines where the current passes through. The action of cocaine hydrochlorate in producing anæsthesia of the pulp and dentine is similarly explained.

The negative pole is applied to the body and the positive pole to the cavity properly insulated containing a solution of cocaine. The cocaine is the positive ion, and as the current is applied the migration of the cocaine ions in the direction of the negative pole immediately takes place.

The action of salicylic acid, lithium, iodide of potassium, etc., when their electrolytical migration is desired is explained in precisely the same manner.

Summary, The migration of ions through animal tissue by the aid of an electric current is called the ion cataphoresis, and consists of three processes.

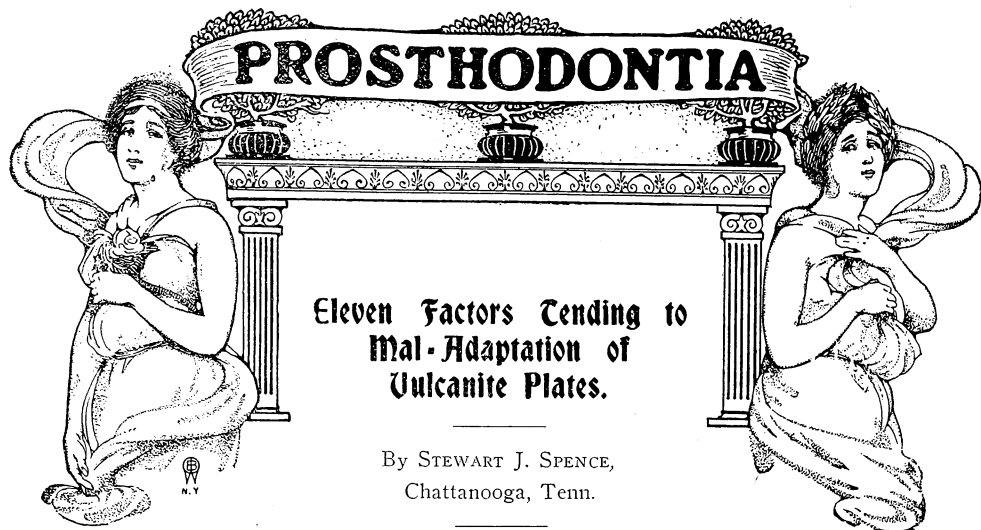
First—The hydrolytical dissociation of the salt by its solution in water, whence positive and negative ions are formed.

Second—The migration of the ions caused by the attraction of the opposite poles.

Third—Osmosis which takes place through the walls of the cells.

Anyone can thus see from the foregoing that it is not necessary to be an electrician, as is often supposed, in order to intelligently and successfully practice this method for the control of pain; and it must also be quite apparent that when a reasonable effort is made to understand the underlying principles involved, its comprehension is comparatively simple.





Eleven Factors Tending to Mal-Adaptation of Vulcanite Plates.

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The present paper is an attempt to focus the subject matter of some five or six previous papers which have appeared in *ITEMS OF INTEREST* during the past year or more, under the titles of "Experiments in Plaster, Wax, Modeling Composition and Vulcanite to Test Warpage, Expansion, Compression, Contraction, etc., which cannot be properly appreciated unless considered in a single field of view. The main if not the whole of the factors which tend to produce misfits in vulcanite plaster are eleven and are as follows:

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|-----------------|---|
| First. | The expansion of the impression, if taken in plaster of paris; its contraction, if taken in wax or modeling composition. |
| Second. | The warpage of the impression, if of plaster of paris caused by restricted lateral expansion. |
| Third. | The <i>first</i> expansion of the model, occurring during the crystallization of the plaster. |
| Fourth. | The warpage of the model caused by restricted lateral expansion. |
| Fifth. | The <i>second</i> expansion of the model, occurring during the twenty-four hours following crystallization, and averaging one-fourth its first expansion. |
| Sixth. | The compression of the surface of the model in closing the flask. |
| Seventh. | The <i>third</i> expansion of the model, occurring during vulcanization, and amounting to rather more than both its previous expansions. |

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Eighth. The lateral contraction of the vulcanite plate while cooling.

Ninth. The warpage of the plate in cooling, occurring when its contraction does not proceed evenly.

Tenth. The vertical contraction of the plate in cooling.

Eleventh. A defective impression caused by error in taking it.

Some comments on these will make them of more value to the reader. They will be considered in the order of their above numbers.

First. The crystallization of plaster of paris is accompanied by two other phenomena—expansion and the evolution of heat. These are both in proportion to the amount of stirring given the mix. Ordinary dental plaster, if stirred very little, has an expansion of about 0.6 millimeter in three inches, but if stirred a minute, this expansion increases nearly threefold, and the evolution of heat is proportionally great. As long stirring also hastens setting, the dentist is tempted to stir the mix long, in order to reduce to a minimum the time the impression shall remain in the mouth; but in so doing he invites expansion, and if the impression becomes warm to his fingers, while yet in the mouth, he may know that the expansion will be great, and he should reject such an impression.

Wax and modeling composition contract in cooling, and to about an equal extent. A strip of either, six inches long, will contract about 1-35 inch, in falling from the heat at which it is taken from the mouth to freezing point. But as the model is cast when the impression is as a rule not near freezing point, but at about 70° F., the slight contraction is inappreciable, except perhaps in very hard-mouths and usually it tends to improve the adhesion of the plate, because the expansion, or rather the three expansions of the model, are usually greater than both the combined contraction of the impression and the contraction of the plate in cooling.

Second. Experiments made by the writer, and published in *ITEMS OF INTEREST* of March, 1902, demonstrated that a certain warpage occurs in plaster impressions and models caused by their tendency towards lateral expansion, being met and restricted by the flanges of the impression tray, in the case of the impression, and by the buccal surfaces of the impression in the case of the model. This resistance does not in these cases result in a compression of the molecules of the plaster, but finds relief by a bulging of the plaster upwards, so that the palatal dome of both impression and model is raised thereby. This results in a tendency of the plate to bear unduly on the hard palatal roof, and demands the "relief chamber" for its remedy.



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Third and Fourth. It is improbable that *all* lateral expansion of a model, or impression, is prevented by the above mentioned resistance. On the contrary, the lateral expansion of a cast run in an impression tray is sufficient to prevent said cast from fitting snugly against the flanges when, after removal from the tray, it is replaced thereon. This indicates that the effort to expand laterally was strong enough to slightly bend outwards the flanges of the tray. Therefore, lateral expansion must be reckoned as a factor towards maladaptation of plates, and as lateral expansion by widening a plate, and thus throwing its weight off the buccal surfaces, bends and throws its dome the more on the palate of the mouth, the expansion of the impression and model act in the same direction as do their warpages in producing a rocking of the plate on the palate.

Fifth. My experiments with an instrument for measuring the expansion of plaster of paris (illustrated in October, 1902, ITEMS OF INTEREST) proved that, following the expansion accompanying crystallization, a second expansion takes place, gradually proceeding for about a day. This second expansion is perhaps due to the absorption of gas from the atmosphere. Its extent is but slight in comparison with the other two expansions. If an impression of plaster of paris is allowed to remain unfilled for a day, its expansion in this manner must be added as one more factor tending to a misfit.

Sixth. Experiments made by the writer in compression of plaster of paris, as recorded in the November issue of ITEMS OF INTEREST, show that the compression of models in flask closing is great; much more than one would suspect. If, however, this compression were equal all over the model, the result might be good, because the plate would be smaller thereby, and this reduction in size would aid the contraction of the impression if of wax or modeling composition, and the contraction of the cooling plate, to counteract the various expansions of the plaster model; but experiment shows that the compression of the model is very unequal, being least on the buccal surfaces, and so causing the plate to bear unduly on the palate, thus adding to the evil of the warpages and expansions of the plaster impression and model, which, as before stated, tends to produce the same undesirable pressure on the palate.

Seventh. Plaster of paris expands largely during vulcanization with wet heat. Let a cast be run in an impression tray and then put through the vulcanizer, either with or without rubber, and on being removed from the vulcanizer it will be found swollen, so that it will not fit back into the tray; and after

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several such vulcanizations there will be a space of about 1-12 inch between cast and tray.

Eighth. Vulcanite contracts largely in cooling. A strip of vulcanite three inches long may be made to contract three millimeters by heating it almost to burning over an alcohol lamp. This contraction can, however, be successfully resisted, as when a serrated metal bar is imbedded in the rubber. A plaster of paris investment largely prevents this contraction, but not entirely so; the less when used "green." A plate should not be placed in water hotter than 130° F. (at which contraction of vulcanite begins) unless with the object of shrinking it with a view to improve the fit.

Ninth. Warpage of a plate differs from contraction only in being unequal contraction. Plates experimented upon sometimes showed one side drawn down while the other remained in its original place, which could only be accounted for by supposing that one side of the plate was held more firmly than the other by the investment.

Tenth. Vertical contraction or the contraction of the thickness of a plate, being of course uncontrolled by the investment, is probably much greater in proportion than the lateral expansion of a plate under investment. As the shrinkage of a three-inch strip of vulcanite when run through the vulcanizer for one hour at 320° F. without any controlling investment is about 1.0 millimeter, it follows that a plate half an inch thick would shrink vertically about one-sixth of a millimeter, which would undoubtedly very appreciably interfere with the adhesion of a plate. The writer, however, has made no experiments to demonstrate this theory, nor can he discover any feasible mode of averting the evil. For these very thick plates, when for the lower jaw, weighted rubber is distinctly indicated, its contraction being much less than that of other rubbers.

Eleventh. Defective impressions may be caused by (1) insufficient pressure on buccal and labial surfaces when these are retreating; (2) by not holding the impression steady after having forced it to place, but relaxing pressure on one side and thus permitting undue pressure to fall on the other, and (3) by undue compression of the soft tissues which is apt to occur when a thin layer of plaster is used over a previously taken impression of wax. In wax or modeling composition the impression may be spoiled by dragging during removal.

From what has been said it will be seen that a good fit comes merely by chance through an accidental balancing of various factors in the case. The contraction of the impression, if of wax or modeling composition, the



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compression of the model in closure of flask, and the contraction of the vulcanite in cooling, all tend to counteract the expansions and warpage of the model. In such a game of chance there is little encouragement to aim at correctness in any one step of the process, because the operator cannot be sure that an error at this step may not be as advantageous as correctness.

That which the dental profession needs very much is a plaster which will neither expand before nor during vulcanization; which will be so hard as to be non-compressible during flask-closing and will retain enough of this hardness after vulcanization to prevent contraction of the plate in cooling. This would eliminate from the above "eleven factors" all but the last two. It is a pleasant thought to the writer, that, now when he is growing old, he will be able to bequeath to his profession, as the result of twenty years of study of this subject, just such a plaster—one which will exorcise the spectre of "misfits," and do for adaptation that which Bonwill's theory and his articulator has done for articulation, although at present it seems to be meeting with a similarly indifferent reception.





Malocclusion of the Teeth Among the Ancient Peruvians.

By ALTON HOWARD THOMPSON, D.D.S., Topeka, Kan.

*Read before the American Society of Orthodontists, at Philadelphia, Pa.,
October, 1902.*

The ancient inhabitants of Peru, before the Spanish conquest, were a most interesting group of people. They had developed a high civilization for their times, even when compared with Europe at that date, and were in many ways superior to the cruel and greedy conquerors who destroyed their civilization and who robbed them, not only of their gold and silver, but of a happy and well ordered life.

On the lofty plateau between the Andes on the east and the Cordilleras on the west—whose feet almost rest in the Pacific ocean—at an altitude of 10,000 feet and more, there was developed a most unique and perfect civilization. The government of the Incas was patriarchal and beneficent and reached every department of the life of the people, and controlled the action of every individual from the cradle to the grave. Under the pressure of peculiar conditions and limited means they developed a social and industrial system that modern socialists might envy and the apostles of economic organizations might study with profit and admiration. It was a thoroughly organized communism, and as a social organism it was perfect. The Incas and their numerous descendants were the aristocracy and filled all the offices, both civil and military, but the people were mildly governed and provided for with patriarchal care. The rule of the Incas was in marked contrast with that of the cruel Aztecs

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of Mexico, on account of its humaneness. Their industry was phenomenal. They left immense architectural structures that fill the river valleys of the coast and the lofty plateaus, that are the wonder of the archæologist. There was a grandeur about their personal and national life that makes all the sadder the ruin wrought by the heartless conquerors.

The ethnology of the ancient Peruvians is rather difficult to make out. The empire was very heterogeneous in the palmy days of the Incas, as it was made up of many various tribes which had been conquered and absorbed into the body politic, but with little assimilation. The Quichuas were the dominant race, from whom the Incas sprung, who had the superior ability and culture, and they it was who developed the wonderful civilization of ancient Peru upon the high plateaus starting from Cuzco, the City of the Sun. The Quichuas were of small stature, of clear olive brown complexion, and their osseous structure is as fine and delicate as that of the better class of Europeans. Their conquest, however, included the large and strong Aymaras of the Titicaca region, who yet constitute a distinct group from the Quichuas. The latter extended their conquest down to the coast and were dominant in the river valleys that crossed the desert between the Cordilleras and the Pacific ocean. The Quichuas of the Inca classes, both on the plateau and on the coast, were a delicate, highly civilized people, and the Aymaras of the plateau were coarse, large and strong. The two groups have different anatomical characteristics which are well shown in their remains. The dental peculiarities are also quite distinct in many respects.

The Skulls of the Quichuas.

The skulls of the Quichua Peruvians found in the tombs are usually small, or medium in size, round or brachycephalic, with a tendency to bulge at the occiput. The Aymara skulls are larger. The forehead is narrow and receding and the glabella and superciliary ridges not prominent except in the coarse Aymaras. The jaws are light and orthognathous, prognathism not being prevalent in the higher types at least. But the natural form of the skulls is rarely found in the tombs for the reason that artificial deformation was practiced to an extraordinary degree by these remarkable people. There were apparently various styles of shaping the head for the purpose of being fashionable, for it differed in different parts of the country. As Prof. J. Wyman says (Peabody Museum Rep.):

"The Peruvian crania present the two modes of artificial distortion, those from the chulpas or burial towers of the district of Lake Titicaca being lengthened, while those from nearly all other localities are broadened and shortened by flattening of the occiput."

The early writers, as Morton, Blake, Wilson and others, supposed

these elongated skulls to be natural, and only examples of excessive dolicocephalic form. They did not think it possible to artificially produce such symmetrical elongation. Besides, they thought that it would affect the intellectual faculties. That children often succumbed to the cruel custom is evidenced by the number of young crania that are excessively elongated. These elongated skulls are found principally in the Aymara district, and it is supposed that this tribe first inaugurated the custom, and it thence extended to nearly all the region of the plateau and down to the coast. But along the coast the fashion of compressing the skull was different. The head was flattened from forehead to occiput, as if between boards, so as to project greatly at the parietals. This was the style at Pachacamac, Ancon, and other coast places. This form is quite like that of the Flat-head Indians and other tribes of the northwestern coast of North America. The bulging of the parietals is very marked, and is not always symmetrical, but often "lop-sided," so to speak. One side apparently got the better of the other and soon became beyond control and bulged permanently more than the other. A deep valley often ran over the parietal suture between the bulged sides. M. D'Orbigny observes (Pritchard, Nat. Hist. of Man, 2,604) :

"In the flattening of the frontal bone, in the projection that it forms over the bones at the upper part, there has evidently been compression before and behind, which has forced the mass of the brain backwards by pushing, as it were, the frontal bone over the parietals. There is also obliteration of the sutures at all points affected by the pressure, even in the heads of the youngest subjects."

Our interest in these compressed crania is to observe whether the custom had any effect upon the form of the jaws. We might expect that the effect of the distortion of the bones of the cranium would affect the position and articulation of the upper maxillary, at least, and cause deformity of the arch. But this was not observed in any of the compressed skulls examined. The arch was full and normal and of beautiful outline in nearly all that had full dentures. Neither the elongated nor the flattened forms seem to present any deformity that might not have arisen from congenital causes. There were deformed jaws, of course, and some of them were associated with the artificially compressed skulls, but it was not apparent that the deformity could have been in any way connected with nor due to the compression.

The writer, in the course of some investigations being prosecuted in regard to the ethnic variations of the teeth, examined about five hundred skulls of the ancient Peruvians in various museums of the United States. While this is not a great number from which to make deduc-





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tions, they may be considered as fairly typical and representative, and the averages would not be affected much by the examination of a larger number of skulls.

Teeth of Peruvians. The teeth of the ancient Peruvians present some general characteristics that must command our attention. In the first place, having an advanced civilization, we find some corresponding effects on structure due to environment, as might be expected. Observations made on the skulls show that their civilization and luxurious surroundings, such as they were, had an effect upon the jaws and teeth resulting in disease, deformity, irregularities, missing teeth, contracted jaws, delicate bones, etc., among the better classes. The writer was reminded that we would need to remodel again our concepts in regard to the effects that civilization has had upon the teeth. A half century ago it was quite the fashion to assume that savage and prehistoric peoples had better teeth than civilized nations, and all because they lived closer to nature and ate coarser food. Then some extensive investigations carried on in different countries on savage and prehistoric skulls disclosed the fact that there was much dental disease and deformity among them, and the pendulum swung too far the other way, so that is where we are today. But in the presence of the disease and deformity exhibited by the cultivated Peruvians we will evidently need to remodel our theories again and return in a degree to the ideas of the pioneers of fifty years ago. This, of course, with some modification as to the prevalence of defective structure and disease as between savage and civilized nations. Here we have an ancient people but one with considerable culture and living in luxury. Indeed they lived a more artificial life than their European conquerors, and were infinitely superior to them in the altruistic provisions of their social and economic organism. We are bound to believe that the artificial, luxurious life of the Inca classes did have a degrading effect upon the oral structures, and induced disease and deformity. These conditions are very marked, and when we consider the luxurious and sensual lives they led, we cannot but assume that there was some connection between degenerate structure and degrading environments. Of course the lower classes there, as elsewhere, present a stronger structure, unaffected by luxury and vicious living—not that they are entirely free from disease and deformity, but they present less of it. So we deduce that among the civilized Peruvians, as elsewhere, the higher stage of civilization and vicious living, accompanied by the environments of such an artificial life, induced and led inevitably to degeneracy of structure and tissual maldevelopment, and that this is especially manifested in the jaws and teeth.

So that it is with especial interest that the writer made observations

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and notes of the Peruvian skulls in reference to the quantity and quality of malpositions of the teeth, abnormal jaws, etc. It was a most interesting study to find here, among an ancient people, the results of degeneracy due to high living and luxury.

The general results of these examinations may be epitomized as follows:

The Dental Arch. Malformations of the arch occurred, but they were not very numerous. Compression at the bicuspids, extending even to the extreme form, called the "saddle-arch," was the most frequent form of derangement. "V-shaped" arches were not so common as the saddle-shape. These deformed arches were not associated apparently with artificial compression of the skull, exclusively, although they were found with it. The famous compressed skull of the Inca, described by Dr. Dorsey, with the very irregular and defective teeth, is one of these. One case of V-shaped arch was flattened from the central to the first molar on the right side. Of course grossly deformed arches were not common, the usual malformation being the slight contraction due to crowding of the teeth or to occasional absence of teeth, as in the case of missing laterals. As a rule the arches were round and full and of fine shape. In the coarser jaws the arch was more square, due to the prominence of the canine, as in all square arches.

The Upper Incisors. A form of malposition that occurred with singular frequency, among the Peruvians, was the eversion of the upper centrals inwards at the mesial borders. Some such teeth were rotated as much as one-fourth of a circle, but the majority only slightly. This often resulted in the destructive wear of the mesial corners. The distal face was sometimes completely turned outwards, thereby overlapping the laterals which were crowded under them by the contraction of the arch. Sometimes, but rarely, the centrals were everted outwardly at the mesial line, and very rarely overlapping at this point. The alignment of the centrals was not often disturbed, unless by contraction of the arch, which was not common. The most common malposition was the eversion of the centrals at the mesial borders. The upper laterals were next in frequency of malposition, sometimes everted outward at the mesial side and overlapping the centrals, but this was rare. The lingual malposition was most common—articulating within the lower incisors, and the upper centrals and canines overlapping it by contraction of the arch. Occasional rotation of the laterals occurred in greater or less degree.

The Lower Incisors. The lower incisors were frequently out of alignment, standing within or without the line of the arch, with consequent contraction and overlapping. The



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laterals were frequently caught behind the canines and held by contraction of the arch. Slight eversion of the centrals inward at the mesial borders was quite common. Irregularity of these teeth to only a slight degree of misplacement was not uncommon.

The upper canines were quite frequently rotated, usually by the distal angle being turned outwards and overlapping the bicuspid. Sometimes they were turned one-fourth round, the buccal face being presented mesially. Of course the canine frequently stood partially or entirely outside of the line of the arch, which was contracted at that locality. This form of malposition was not infrequent. Occasionally they were erupted within the line, but this type was uncommon. This form seemed to be due to the causes with which we are only too familiar, i. e.—articulation within the lower teeth, and consequent contraction of the upper arch.

The lower canines were occasionally erupted within the line, but the usual form of malposition was without the line, sometimes the full width. Rotation similar to the uppers sometimes occurred, but it was not so common.

The upper bicuspid exhibited a remarkable amount of malposition. Being rather small in size, as compared with those of Europeans (which the writer found to prevail in most American races), they seem prone to displacement, as if they were not able to resist the erupting force of the stronger canines and bicuspid. But be that as it may, the bicuspid among the Peruvians were the subjects of an unusual amount of disturbance. They frequently stood without or within the line one-half to all the width of the crown. Bicuspid erupted entirely within the arch were not uncommon, the arch being entirely closed up. Some were found impacted in the bone, not having been able, apparently, to erupt for want of room. The crowns were frequently rotated, also, one-fourth to one-half of their circumference, the buccal and lingual faces being transposed. This unusual type was far from uncommon.

The lower bicuspid were subjected to the same disturbances and frequently stood outside of the line one-half to all of their thickness. The crowns were sometimes rotated to a greater or less degree, but not so frequently as the upper bicuspid.

The upper molars exhibited some degree of disturbance, being frequently slightly out of line and sometimes to one-fourth of their width. No excessive malposition of the molars were observed, except, of course, in the third molars, which presented all the ordinary types of malposition with

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surprising frequency. In the saddle-shaped arches the first molars, both above and below, stood out of line, or perhaps the contraction of the arch at the bicuspid left them in normal position. The upper first molars were not infrequently slightly rotated.

The lower molars were but rarely out of line and still more rarely rotated, except, of course, the third molars, which were frequent subjects of disturbance, as much so as with Europeans.

Supernumerary teeth were found, but yet were not common—scarcely the same percentage as among Europeans. The most frequent of these reappearances of suppressed teeth was the third incisor above, which was usually located lingually of the median line between the centrals. It sometimes disturbed the centrals by pushing the median angles outward. In one case the third incisor was fused to the lateral. Rarely the positions were transposed, as when the canine and first bicuspid changed locations. Supernumerary bicuspid and molars were very infrequent, only one or two of these cases being observed. Suppression of the upper laterals sometimes occurred. Such a case is described by Dr. Geo. A. Dorsey of the Field Museum. (*Cosmos*, 1897, p. 213.) This is to be expected in a race which exhibits so many of the stigmata of degeneracy.

Excessive irregularity in which nearly all of the teeth were the subject of disturbance was not common, not nearly so frequent as among Europeans. But the presence of malpositions of the teeth indicated the tendency to degeneracy that was so apparent in many respects among the Inca classes. It was interesting to observe that even among this ancient race integrity of structure and normal development of the teeth and jaw was, like modern civilized peoples, in inverse ratio to the progress of culture and luxurious living.

Discussion.

It is very interesting to know that these people of that far off time had irregular teeth, but I would like to know whether there were any orthodontists in those days, and if so, what their methods were. It occurs to me that it is unfortunate that we still need to have such descriptions of the malpositions of the teeth. If the essayist had only studied them and classified them, and we could know how many belong to one class and how many to another, it seems to me it would have been of far greater value to us. I regret that that was not done. We do not know from that description



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whether they were mouth breathers; whether they exhibited the usual conditions we have to contend with nowadays or not, and I shall be glad when the time comes that scientists adopt modern classification or something better, so that we can understand it.

Dr. Kemple. I should think to attribute the deformities of the ancient Incas and Peruvians to a very high degree of civilization and luxurious living, would be hardly in keeping with the investigations of the most recent historians. I just noticed recently in reading one of John Fiske's histories of the discovery of America, speaking about the degree of civilization that the people of this continent had reached before the Europeans came here, he said the highest degree of civilization had only reached what we know as barbarism; that among the Incas,—in fact from the Esquimau to the Patagonians—there were no people who had advanced beyond barbarism; that our idea of the luxurious civilization existing among the Incas and ancient Aztecs is not correct, showing, I should think, that it could hardly be argued that luxurious living and a high degree of civilization resulted in degeneracy. I do not know what the essayist's authority is for saying that the Incas were far in advance of the Europeans of that time, but it is certainly not in accordance with recent investigations.



SOCIETY PAPERS



The Treatment of the Deciduous Molars.

By C. N. JOHNSON, L.D.S., D.D.S., Chicago, Ill.

*Read before the Second District Dental Society of the State of New York,
January, 1903.*

The chief problem in the care of the deciduous teeth, and the maintenance of perfect comfort in mastication till the permanent teeth are erupted, relates to the proper management of the deciduous molars when they have become decayed. The deciduous incisors are usually lost and replaced by permanent ones at least five or six years before the molars are shed, and those years are sometimes very trying both to patient and practitioner. It is becoming quite generally recognized in the profession, and in fact to a large extent among our patients, that it is a matter of great importance to keep the deciduous teeth well cared for till they are lost by natural processes.

Evils of Faulty Mastication.

Aside from the resultant pain induced by exposed pulps and acute alveolar abscesses, and the constant absorption of pus into the system from chronic abscesses, there is another train of evils following neglect of the deciduous molars which is even more far reaching in its effect than either of these. This relates to the habits of mastication formed during youth as influenced by the condition of the deciduous teeth. If a deciduous molar is allowed to decay to any depth, it naturally becomes sensitive to the impact of food. It takes the little patient but an instant to recognize the fact that to bite on that tooth results in discomfort, and a few twinges following the attempt to masticate on this particular side of the mouth are sufficient to relegate all of the food to the opposite side. Unilateral mastication does not subserve the full func-



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tional activity which nature intended in the proper management of the food by the teeth in its preparation for the stomach. More particularly is this the case in the mouths of children, where the total area of mastication is not very great, and where any reduction of this area proves serious. But worse than this, if a molar on each side of the mouth becomes involved—as is frequently the case—there is a very material crippling of the process of mastication, and the patient, not having arrived at years of accountability, has only one resource—the avoidance of mastication. Mastication hurts, and the only way to keep from being hurt is not to masticate. The result of all this is that the child begins bolting the food without chewing it, and the ultimate effect is to form a habit which may last through life.

If we study carefully the methods of mastication among adults, we shall find that there is a great variation in the thoroughness with which this function is performed—even among those who have relatively the same masticating equipment. If two individuals having equally good teeth show a striking variation in mastication, it must be due wholly to habit, and it is only reasonable to suppose that this habit is formed for the most part during youth. It will thus be seen that even apart from any consideration of the patient's present comfort and health, the maintenance of the deciduous molars in a condition of normal serviceability is a matter of very great importance.

In considering the care of these teeth it may be well to study separately the different classes of cavities and the different conditions manifested during the progress of the disease. In doing this no attempt shall be made to take up a certain phase of the subject which, though having a very intimate bearing on the management of children's teeth, is of a character unsuited for presentation before a body of experienced practitioners. This relates to the control of the patient, the study of temperament as it affects the handling of these cases, and the general comity between patient and practitioner which enables the latter to carry out his work to the best advantage. All of this is something for each individual to study for himself, and it simply resolves itself into one of the chief requisites for the successful practice of dentistry in any of its departments, viz.: an intimate knowledge of human nature.

Taking up the technical procedures of the work then, the first class of cavities to be considered will be small occlusal cavities.

Small Occlusal Cavities.

The control of this class of decay is usually not a very serious matter, and yet it is important that these cavities be given the closest attention. The direct impact of food on the occlusal surface renders a cavity in this region especially susceptible to discomfort during masti-

cation, and it should therefore receive adequate protection. Probably the most serviceable filling material for these cavities is amalgam, though there are some cases in which, on account of the sensitiveness of the cavity or nervousness of the patient, no metal filling can be successfully used. It is, of course, not necessary to form cavities with the same degree of thoroughness demanded of operations on the permanent teeth, and yet if we use amalgam we must at least remove the decay. To do this in some cases is difficult, particularly when the cavity has long been exposed to the fluids of the mouth and is exceedingly sensitive. To place oxyphosphate of zinc over a mass of decay and leave it for any time is hazardous, while to insert it temporarily with the idea of substituting it with something else in a few weeks after the sensitiveness is relieved involves the difficulty of removing it. The best plan of procedure in these sensitive cases is to flood the cavity well with one of the essential oils, and then pack it with gutta percha for a week or ten days. Usually at the end of this time the gutta percha may readily be removed and the decay taken out with little discomfort. Pink base-plate gutta percha is best for this purpose, but in case the tooth is so sensitive that it cannot tolerate the heat and pressure necessary to manipulate the base-plate, some of the softer temporary stoppings requiring very little heat to soften them may be used.

The only preparation the cavity needs for filling aside from the removal of the decay is to break down thin enamel walls which overhang the cavity and make reasonably strong margins. In doing this hand instruments are usually preferable to the engine, though in certain cases a bur may be used to advantage if the patient is not too much frightened by it. In breaking down thin enamel around an occlusal cavity great care should be exercised not to allow the chisel to impinge against the interior of the cavity. This is usually very painful and unnerves the child. The best means of doing this work is with a very short bladed hatchet or hoe excavator, the shank of which will impinge against the outer surface of the tooth as each piece is cleaved away and thus prevent the blade from coming against the sensitive tissues in the cavity.

The fact that the crowns of these teeth are very short renders it impossible to admit of much decay on the proximal surface without involving the occlusal surface, so we are seldom called upon to prepare simple proximal cavities. The operator is fortunate if he catches the case shortly after the occlusal wall is broken in and before the pulp is involved. If only one tooth is decayed the problem of filling is simplified, but when the contiguous surfaces of both molars are gone it becomes vastly more complicated. In case there is only one cavity to deal with

**Small Proximo-
Occlusal Cavities.**



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and the pulp not involved the most serviceable material to use is amalgam, but where the pulp is too close to admit of a metal filling, the choice must be between gutta percha and cement. These materials are temporary in their nature, but there is this advantage in gutta percha over cement: that when it fails it is not deceptive in its method of failure as is sometimes cement. Gutta percha wears away on the exposed surface more rapidly than cement, but it seldom admits of a pronounced excavation under the filling. With cement we may find a filling badly undermined at the gingival margin even to the point of pulp exposure when from the occlusal aspect the filling appears in good condition. But on the other hand there are some of these cavities of such a form that gutta percha will not remain in them, and so sensitive that they cannot be formed to retain it. In these cases cement may be made to do service by virtue of its adhesive properties, and the difficulty at least tided over temporarily till the tooth is in a condition to accept more permanent work.

In cases where both molars are involved and the cavities face each other, a very serious complication at once manifests itself. If we restore the original contour of the tooth with the limited anchorage which we are usually able to get in these sensitive cases, we are liable to have the fillings loosened by the tipping stress exerted in mastication; and if we do not contour, we at once subject the patient to all the annoyance and pain of having food wedged between the teeth into the interproximal space. This matter of the wedging of food between the deciduous molars is really responsible for much of the complaint made by children during mastication, and to overcome this difficulty is one of the chief problems presented to us. In some very persistent cases it seems impossible of accomplishment, short of bridging across from one tooth to the other in a solid mass of filling. This method has serious objections and should be resorted to only in those desperate cases where nothing else promises relief. When it is attempted, the filling should be preceded by a small flat metal guard laid across the interproximal space over the gum, and resting one end on the gingival wall of one cavity and the other on the gingival wall of the other. Over this the filling may be built with the utmost assurance that the gum will be perfectly protected against injury and the teeth made comfortable. These metal guards may be cut from thin clasp metal or german silver, and before being placed in position a small bit of gutta percha may be stuck to each end and warmed so that when the guard is pressed against the gingival wall of the cavity the gutta percha will seal the space between the guard and the cavity.

As to the kind of filling material to be used in this bridging process we are practically confined to two—gutta percha and amalgam.

Cement is almost worthless for this purpose. It is so rigid that it

will not in the least accommodate itself to the individual movement of the teeth during mastication as will gutta percha, and it is not sufficiently strong to hold firm when pressure is brought to bear upon one tooth and not on the other. The consequence is that in a very short time we find it loosened from one of the cavities and frequently from both. The same difficulty arises, though in a less degree, with amalgam. But amalgam is much stronger than cement, and if we can get deep anchorage for it in both cavities it will sometimes remain secure for an appreciable time. Gutta percha is the best material for this purpose with the one limitation that it wears away quite rapidly and calls for periodical renewal. But meanwhile the teeth are kept comfortable for mastication, which is an important consideration, and it would seem preferable in desperate cases to see the patient every two or three months and renew the gutta percha rather than resort to methods which so often prove disastrous.

In cases where the cavities are filled without bridging, it is always best if amalgam is used to fill one cavity at one sitting and the other at a subsequent one. This admits of giving the proper contour to the first filling and so rounding out the contact point and polishing it after it has become hard that the second filling may be conveniently built against it and trimmed to the best advantage. If this is attempted with both fillings at once while the amalgam is soft, it usually results in imperfect contact or in an appreciable space between the fillings.

When a pulp becomes exposed in one of the deciduous molars the problem arises as to how it shall best be treated. Usually these pulps are not very tenacious of life and so are not susceptible to treatment for their preservation. And yet it would seem undesirable, in view of all the conditions surrounding the case, to make an application of anything so powerful as arsenic to destroy a pulp in a deciduous tooth. The distance from the point of exposure to the apical foramen is not very great, and the vascularity in these young tissues is more pronounced than in adult life, so there is always the possibility of the effects of the arsenic being carried beyond the tooth into the apical space. This is especially true if absorption of the end of the root has begun preparatory to the admission of the permanent tooth. Added to this is the difficulty of securing perfect sealing of the agent in these young mouths where the control of the patient is usually not so certain as with adults, and where the area between the point of exposure and the gingival margin of the cavity is exceedingly limited. If an exposure occurred in an occlusal cavity and the pulp were very troublesome and persistent of life, there might be some justification for applying a minute quantity of arsenic, but these

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conditions so seldom arise that it may be stated as a safe rule never to apply arsenic to a deciduous tooth. The seriousness of the effects of arsenic when carried beyond the apex in children's teeth may easily become very great, and the necessities of the case do not ordinarily call for so evident a risk. As has been stated, these pulps do not die hard, and if given a reasonable chance they will ordinarily disintegrate of their own accord. The problem is merely to keep them comfortable during this process, and this can usually be done in the following manner:

When an exposed and inflamed pulp is brought for treatment, the first procedure is to syringe out the cavity with warm water and remove all of the debris and decalcified dentine with an excavator. This may readily be done in these cases, with almost no pain, if the operator is careful not to touch the pulp. After the cavity is cleaned as perfectly as possible, it is usually best to slightly puncture the pulp with a fine explorer to induce a free flow of blood. This may cause momentary pain but it is only momentary and subsequent relief is thereby assured. When the pulp begins to bleed, warm water should be gently syringed into the cavity till the bleeding ceases, by which time the tooth will usually be comfortable.

Make a paste of the oil of cloves with the powder supplied with our oxyphosphate of zinc, and gently pat it over the exposure and seal the cavity carefully with gutta percha. A pulp treated in this way will remain comfortable till it dies, and the first indication of death is a slight soreness in the tooth on pressure. Instruction should therefore be given to bring the little patient to the office on the first symptom of soreness, when the gutta percha may be removed and the canals treated in the usual way. Of course, there is occasionally the possibility of the case being neglected, as other cases often are, till an abscess starts, but this is a contingency for which the dentist is not responsible, and usually if an abscess does begin it can readily be relieved by opening the cavity to give it vent, syringing it out well with warm water and applying an antiseptic.

The treatment of pulpless deciduous teeth is little different in plan from that of permanent teeth with the exception of two features of the case which need mention. A deciduous tooth, the canals of which have been exposed for any length of time to the fluids of the mouth seems to become more extensively saturated with the products of decomposition than a permanent tooth under similar conditions. There is nothing viler ever tolerated in the human mouth than a long exposed putrescent deciduous molar. It taints the breath of the little patient, and the first stirring up of the contents of such a tooth usually permeates the air of the operating room for some distance. In addition to this there

is ordinarily greater difficulty in securing a perfect mechanical and medicinal cleansing of the cavity and canals in a child than in an adult on account of the limitations under which the operator must work. It is not often possible to apply the rubber dam, and the problem of excluding fluids of the mouth during the treatment of the case is difficult. In view of these conditions it is frequently necessary to extend the treatment over a greater length of time, and to change the medicaments oftener than usual in order to overcome the putrescence and render the tooth fit to receive the filling.

In cases of abscess with fistulous opening, if the fistula does not heal after the canals seem in good condition and medicine has been forced through the fistula once or twice, it is sometimes a very effective method to flood the canals with a solution of gutta percha in eucalyptol and pump this through the fistula, following it immediately with a solid gutta percha root filling. The reason for not doing this in the first instance is because these putrescent cases should be kept under the influence of an antiseptic for at least a week before attempting to fill the roots. If the canals have been made aseptic, the fistula will usually heal, following the passage of the eucalyptol solution.

In discussing pulpless deciduous teeth there is one brief reference which would seem desirable before closing the subject. The question has sometimes arisen as to the effect of the loss of the pulp on the process of root absorption preparatory to the eruption of the permanent teeth, and the statement has been made that roots would not be absorbed if the pulps were destroyed. This is a manifest error, as has been amply demonstrated by the exhibition of deciduous crowns which have toppled out with the roots completely absorbed and the gutta percha root fillings still clinging to the crowns. But it is a different matter if the teeth are allowed to remain in the mouth badly abscessed. With the ends of the roots constantly bathed in pus the normal process of absorption cannot be expected to go on, and this is only one additional argument why diseased deciduous molars should be restored to a condition of health.





The Technique of Gold Fillings in Sixth Year Molars, Occlusal Cavities.

By RODRIGUES OTTOLENGUI, M.D.S., New York.

Read before the Second District Dental Society, Brooklyn, January, 1903.

Means are constantly being suggested whereby the public shall become better educated in dental matters, but experience seems to teach that the most effective propaganda of public education is that which emanates from the dental office, and is directed by the practitioner towards the patient. A quarter of a century ago, when I first began the practice of dentistry, only a small percentage of parents comprehended that any teeth of the permanent set arrived, prior to the visible normal loss of any of the temporary teeth. For this reason it was a common experience to find young children brought in for the lancing of "gum boils," which proved, in the circumstances, to be incurable abscesses on the sixth year molars. The palpable distress evinced by parents and guardians when informed that the diseased teeth must be doomed to the forceps, and that they would not be replaced by others, carried with it the lesson that the neglect of these important organs had been due to ignorance and that parents properly informed would adopt almost any measures to save the teeth of their children.

During the last twenty-five years dentists have been repeatedly preaching the proper care of the teeth, and especially of the sixth year molars, with the result that today scarcely any of our patients imagine that these large teeth will be shed and replaced by others.

Application to the dentist for examination and filling of teeth for very young children is an everyday occurrence, and now that the public has been so largely educated as to the necessities of saving the sixth year molars it becomes more than ever needful that the dentist should adopt the very best and surest method of accomplishing this most desirable result. And while the public have become so much better educated in the premises it is a sad commentary on the vaunted advance in dentistry, that the practice of dentists in relation to the filling of sixth year molars has not improved, if indeed it has not really retrograded.

Influence of Amalgam.	Amalgam, one of the most useful materials in the dental cabinet, has had a most baneful influence. Nor do I hesitate to assert that the improvement in the manufacture, manipulation and consequent permanency of the amalgam filling, has added to, rather than lessened the
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evil. The more confidence the dentist has in amalgam the more readily does he turn to it in the presence of difficulties, preferring to shun trouble rather than to face a trying operation, even though a larger fee might accompany the extra effort. This is why so great a proportion of large cavities in the mouths of adults are filled today with amalgam; but this is inconsequential compared with the other fact that so great a number of *small cavities* in molars for children are filled with amalgam. And here I pause to make a statement in CAPITAL LETTERS: THE FILLING IN THE OCCLUSAL SURFACE OF A MOLAR SHOULD NEVER BE A SMALL FILLING.

The difficulties arising in connection with molar cavities in children's mouths are not due to the troublesomeness of the cavities, but are traceable to the trials, loss of time and strain upon the patience of the operator when dealing with such youthful patients. The temptation is great, and too often irresistible to make the operation as brief as possible. Where this is absolutely necessary, as it often is with spoiled and petted darlings, there is no objection to the following of such a course. Dealing with an intractable child it is permissible to remove only the absolute caries, without attempting any extension for prevention, but this being done it is, in my opinion false practice to deceive the parent and one's self by filling the little occlusal cavity with amalgam, under the supposition that a permanent operation is thereby performed. Amalgam in such places is almost never permanent, in the sense that it might serve in even similar cavities later in life. What is often called *recurrence* of decay, but what I prefer to look upon as *continuance* of decay is, bacteriologically speaking, a more or less certain sequence. The parent having been informed that the tooth has been permanently filled, and having faith in her informer, feels safe and only awakens to the truth when so great devastation will have occurred as to require a much larger, and what is more important, a much deeper filling than ever should have been permitted to find lodgment in a tooth which at the outset was but slightly affected by caries. In the same circumstances, the child being intractable, and the cavity for that reason not extended, the dentist has at hand an equally simple recourse which carries with it certain salvation of the tooth without extensive continuance of caries. Such cavities should be filled with pink gutta percha (base-plate), and the parents and the children informed that the filling is but a temporary device meant to save the tooth until such time as a proper filling of gold can be inserted. Both parent and child leave the office with a totally different notion; the tooth will be under constant surveillance, and will be brought back for refilling long before any serious depredation shall have occurred. It has seldom been my experience that a second temporary gutta percha filling would be required. Usually at the time of refilling gold can be used.

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Preparation of Cavities for Gold.

Having admitted that the youth and intractability of some patients may inhibit the attempt to fill with gold at the outset, and having pointed out the safer practice in such case, let me turn now to the great majority of cases, which roughly estimated I place at ninety-five per cent, where gold may be utilized as a primary procedure. Last summer, at Asbury Park I read a paper advocating the use of gold for children's teeth and subsequently I read a second paper on the same subject before the Canadian Dental Association in Montreal. From the discussion following these papers I was forced to believe that while many men use amalgam as an easier mode of proceeding with children, still a considerable number of able practitioners, whose views we must respect, conscientiously believe that amalgam in young teeth is absolutely superior to gold; that gold is really unreliable and that caries will recur more surely if gold be used than if the resort were amalgam. This has lead me to a closer consideration of this fact, and I may add has inspired this paper.

I have been accused of posing as being unusually skilful in the use of gold. In reply I will only say that I wish I were as skilful as many of my *confreres*, whose work certainly excels my own.

If it be a fact, and I unflinchingly state that it is a fact, that my gold fillings inserted for children do not fail, one of two corollaries is logically unavoidable. Either I am more skilful than those who admit that their own fillings in similar situations fail; or else there is something in the method which I follow which accounts for the difference in the result. I think that both of these deductions are true to some extent. While I am probably not more skilled in the actual management of gold than others, and make no claim to such superiority, perhaps I may succeed better than some, in the management of children. Perhaps I can make children submit to more than can those who dislike that part of their practice, shirk the great responsibility of patiently giving proper service, scoop out tiny cavities, stuff them with amalgam, and having followed such practice come to meetings where gold is advocated and rise up in the center of the hall and decry those who are following a better and a harder method, as cruel to little children, at the same time asserting that gold fillings in children's teeth will fail. Perhaps, I say, I may have more skill in the management of children than such as these, and I am willing to admit that gold fillings put in by men who have faith neither in their operation nor in themselves, very probably fail. But I have no more skill in this direction than may be attained by any man loving children, patient in treatment, gentle but firm in his touch, rapid in his work yet doing but little at a time, and withal determined to make a permanent operation as frequently as possible. The younger men, entering upon their careers who

will follow this mode in their work, who will cater to their children, kindly, gently but firmly doing permanent gold fillings will build up for themselves a clientele who will be faithful in their allegiance and who will acquire the worthy habit of always demanding the best that dentistry affords. Moreover they will pay for such service.

Approaching the second corollary, the question arises, is there anything in the method which I have followed? This I prefer not to answer, but I will endeavor to give it in such detail that others if they choose may try my way and learn by experience whether or not it leads to permanent work.

<p>Treatment of the Sulci in Sixth Year Molars.</p>	<p>In order to scientifically fill the occlusal cavities occurring in sixth year molars, more especially what I have termed initial cavities, it is needful to make a close study of the sulci. Let us begin with the upper molar.</p>
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The type of this tooth is one in which we find a depression in the anterior occlusal surface briefly describable as a series of radiating grooves concentrating in a deep pit at the bottom. Posteriorly there is a transverse depression or groove extending from near the buccal surface towards and most often over into a similar groove at the palatal side.

Between the anterior and the posterior depressions there is usually a well marked ridge, rarely crossed by a fissure in the first molar, though frequently it is markedly so in the second molar, while in the third the depressions are usually merged into one. Caries commonly attacks this anterior depression at the extreme bottom of the pit where lodging-place for food is found, because the pit is made by approximation of the infolds of the enamel plates. Even where caries has not appeared it is not uncommon to find this pit deep enough and wide enough so that an explorer apparently enters a cavity. In such cases the tooth should be filled, whether carious or not, there being no place where the doctrine of prevention being better than cure is more applicable.

From the pit at the bottom of the depression will be seen radiating lines which may be either actual fissures, or merely depressions. Two of these lines require special attention. Anteriorly will be seen a line or fissure which terminates in a bifurcation forming with the stem of the fissure a Y. All dentists of course cut out that part of this fissure which corresponds to the stem of the Y because it leads directly down into the actual central pit where the caries is. Many stop cutting as they reach the bifurcation leaving untouched the V part of the Y. But in making the extension not only should the V part of this Y fissure be cut out, but the little hillock of enamel lying between should also be removed. This is not always easy to do. Often the V part of the Y shows as mere radiat-

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ing depressions and are not truly fissures in character. In such cases it is not always easy to cut them out, especially when dealing with a child.

I may therefore take up the instrumentation of such a cavity. Dealing as I am with initial cavities, which, as I have said, never should be prepared for a small filling, the start is made with the tiniest of rose burs, one that is sharp, a new one being preferred if you would save pain to the little one. Of course in the presence of a true cavity a larger bur may be used, but to save pain the smaller bur is preferable. The actual caries having been removed partly with the bur, and in case of sensitiveness with hand excavators, the spoon being chosen where it can be used, the next step is to extend the cavity. Here I use the tiny rose bur again wherever there is an actual fissure; reaching the bifurcation of the Y-shaped fissure already described, let us suppose that it ceases to be a true fissure and becomes merely two lines of depression radiating anteriorly. I change my bur for a tiny "gem" stone and grind away the little hillock of enamel lying between the lines forming at this point a smooth sloping depression without lines. Usually, however, it will then be seen that the radiating arms of the V are more nearly true fissures than had been supposed. Now a tiny wheel bur is taken and the two depressions easily trace at the same time forming slight lateral undercuts. The same general mode of preparation is followed with all sulci or radiating lines of depression. Should two such grooves after preparation lie closely together a stiff hatchet will easily chip away the intervening ridge of enamel converting the two into one. A cavity prepared in this way appears as a well defined central cavity with radiating grooves following the course of the original sulci. Such preparation with tiny burs is almost painless. No effort should be made to greatly widen these grooves for a reason which must now be explained, and which is the essential feature upon which in my opinion largely depends the success of the whole operation.

Leaving the initial occlusal cavity for a moment, let us consider one which comes to us so large that after preparation the true edges of the cavity lie far out towards the lateral walls and therefore high up on the cusps. The best that can be done with such a cavity is to prepare it with strong enamel margins and after filling we will have the true cavity margin, in contact with the gold filling, exposed to the stress of mastication, and the depositions of food debris. In other words, the actual edge of the cavity, and the actual edge of the gold are in contact at the extreme surface of the cavity.

Going back now to the initial cavity which I have prepared, a central cavity at the bottom of the pit with radiating grooves cut out with the smallest of instruments, suppose that we fill such cavity only up to the true margins of the prepared cavity. We would have as a finished filling a

gold inlay with arms extending in all directions like an octopus. Such filling would, like the large one, have all its cavity margins exposed to the stress of mastication and they would be constantly covered by the filth of the mouth.

But my method in filling such cavities is to proceed with my gold, filling the area over and above my octopus like cavity, so that when completed the initial cavity, prepared with a minimum of cutting away of tooth substance would to the eye exactly resemble that larger cavity where a large part of the occlusal surface appeared to be gold. But by this procedure, where are our cavity margins? The contact of gold and enamel edge is buried deep under the overlap of gold. This gives two important results. First the actual weak spot, the true cavity margin, cannot be reached by oral filth, and cannot be fractured, crushed or crumbled by masticatory stress. Secondly, once the tiny grooves are filled flush and the gold is brought over the true enamel margins, further malleting is supported by solid underlying polished enamel, and a very heavy blow, using strips of heavy foil either in sheets or in folds, will bring us the ultimate of contact possible between gold and tooth substances.

As soon as you comprehend this principle, it becomes clear why the grooves are cut out so narrow. For as they are widened, the cavity margins creep up the sloping sides of the cusps and there is less and less overlapping of the gold, so that the true cavity margin is nearer and nearer to the surface, where all the dangers are.

It must not be understood that these fillings when completed produce teeth with flat tops, thus destroying their masticating usefulness. This is true prior to polishing, but the finishing brings us a different result. Small stones are used at first, producing a slight concavity of the gold, care being taken to avoid grinding of the enamel. When only slightly too high for the bite, the surface left by the stone is easily marked by contact with the cusps of the occluding tooth, and then small round finishing burs are used to cut out depressions for the reception of these occluding cusps. The result will be a masticating surface which will be serviceable without having cut away the overlap of gold which protects the true cavity margins. The filling should be finally finished with burnishers which must be used with all the force possible, in order to make the surface even more dense than can be obtained merely by mallet force.

It is just at this point that I may best point the moral of my whole contention. Believing as I do that in occlusal surfaces, recurrence of decay is obviated best by the thorough cutting out of all fissures and grooves; by cutting them as narrow as possible to be sure of eradicating all decay; and by then overbuilding the gold so as to lap the enamel mar-

**The Reason for
Early Filling.**



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gins, it follows as a logical sequence that the larger the cavity, the higher up on the slopes of the cusps are laid the margins, the less certain becomes the permanency.

Consequently the very best, the most permanent filling for this situation is that which is placed so early in life that the grooves can be cut narrow. When the cavity has its earliest inception; when the finest explorer just probes the depths of a cavity just started; then the adjacent fissures are untouched by caries; and therefore they can be cut out, into narrower prepared grooves than at any other time; then, when no caries is present in the contiguous fissures the cutting is painless; then only can the very best filling be placed, the one which however large it may appear to the eye, is placed with the smallest actual cutting of tooth bone, and which lies farthest away from the pulp chamber, thus obviating that bugbear, thermal changes and death of the pulp; thus it is and for these reasons that I say fill the initial cavities in sixth year molars with gold at the earliest moment possible. Where it is impossible, make the preparation as nearly complete as the child will permit and use pink gutta percha, overbuilding it in the same manner as prescribed for gold. This style of filling cannot be done with amalgam. At least I have never seen it done. Nor do I believe that it is feasible to overbuild the edges with amalgam and then cut out the central area to perfect the occlusion with any hope that the friable material will not break away under stress of mastication and produce those gaping ditches around the fillings which have often erroneously been ascribed to shrinkage.

Treatment of Other Surface Depressions.

The practice outlined for the anterior depression in the upper molar is in its general aspect applicable to all molar occlusal cavities. One or two special points are worthy of notice. The posterior depression in the upper molar extends transversely towards and down into the palatal sulcus. This latter occasionally appears as a mere line and may need no attention. Where it is a true fissure, whether carious or not, it should be cut out and made a part of the occlusal cavity. It should be cut out thoroughly, by which I mean that the bottom of the occlusal cavity should be practically low enough to reach the extremity of the palatal sulcus after the extension is made. This will enable the practitioner to fill that part of the cavity, the palatal sulcus, by direct pressure through the occlusal opening, the blow being in the direction of the long axis of the tooth. The converse proposition will hold in the lower sixth year molar. Here we have a buccal sulcus and a crossed occlusal fissure. In well marked cases one arm of the cross will continue over into the buccal fissure, but extension should not be as in the upper jaw. It should not pass through the buccal wall to the depth of the floor of the cavity. Such

procedure too greatly weakens the standing cusps and fracture of the walls outwardly is invited because of the situation of the fissure, and because of the peculiar lateral motion of the mandible which brings the stress against these buccal walls forcing them outwardly, whereas the same movement merely pushes food along the filled groove cut in the upper tooth. Caries in the buccal sulcus of the lower molar usually has its inception at the lowest point of the fissure, and preparation merely should remove the carious portion; extension upwardly towards the occlusal surface should be as shallow as possible so as not to weaken the wall by disuniting the cusps. The same rule should hold in preparing that arm of the cross sulcus in the occlusal surface. All caries of course must be removed, but the cavity should be decreasingly deep as it approaches the buccal sulcus. I prefer, where possible, to fill the two as separate cavities. Where it becomes needful to unite the two, the connecting band of gold should be as shallow as possible.

This paper is already sufficiently long, and consequently I cannot take up any other occlusal cavities, such as those that reach the occlusal surface from caries starting elsewhere. I may simply say that the treatment of such cases is practically the same whether for the adult or the child. The object at which I am aiming has been accomplished in this paper, though I have restricted myself to the initial cavity in children's molars. I have mainly wished to give the philosophy of early filling with gold.

Porcelain Inlays and Their Limitations.

By C. E. BENTLEY, D.D.S., Chicago.

Read before the Southern Wisconsin Dental Society.

In any calling of the applied sciences, the first effect of an announced new idea is to sweep before it innumerable devotees of the old and tried methods into a seething whirl of enthusiastic confusion, from which sooner or later they float back as so much flotsam and jetsam to new harbors of anchorage, to await another tidal wave which again sweeps them from their moorings, and again and again this is repeated until, by and by, they become safely anchored to those things which have been tried, and await the experience of the buffeted unfortunates before they launch their professional canoes in the eddies of misfortune and failure. This is experience.

A few within the sound of my voice remember when nothing but non-cohesive gold was used for the filling of teeth; when the high priests



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of that doctrine would listen to no other. Later, advocates of cohesive foil came upon the scene and the literature of the early history of dentistry records a royal battle between the champions of these two methods. But who can deny that both have left us a legacy of useful information, the employment of which has enabled us to save countless teeth for our patients.

A larger number may remember what was called the *New Departure*—a method that recognized no metal as a proper material for the saving of carious teeth, but a skilful use of the plastics was urged as the *sine qua non* of all practice. This tidal wave had a rapid rise and a more rapid subsidence, but in its wreckage many valuable bits of knowledge were gathered and they form a part of the dentist's armamentarium to-day, to remain for all time.

Every one remembers the cataphoric wave that swept over the dental horizon with the majesty of a meteor—the wavelet of cocaine for the extraction of teeth, etc., etc. But who has not gained by reason of these tidal waves? In each instance the residue left in the crucible of time and experience has been the few imperishable truths about which unhealthy enthusiasm and indiscriminate application built a theory which could not stand the test of time, but from which much knowledge was gained and advance made.

And thus we come to examine more critically the latest tidal wave upon whose crest so many are having a dizzy whirl today.

It will not serve my purpose to speak in detail of the technic of porcelain work, nor to compare the several methods that are under discussion. The journals have so thoroughly exploited this phase of the subject that it is taken for granted that a body of this character is entirely familiar with its technic and the methods, and discussion at this time is unnecessary.

There is, however, a tendency in the profession to run to the extreme in this matter—as I view it—and do incalculable injury to what ultimately is destined to be a rational method of saving some teeth by its employment. But its indiscriminate use, especially in its unperfected state, will surely bring it into bad repute, and prematurely discourage that lasting, healthy enthusiasm that pursues all new methods until its detail is perfected.

My excuse, then, for giving this utterance is to sound a note of warning to that class of enthusiasts who insist upon porcelain fillings in nearly all cavities, to the exclusion of all other materials. Let me be understood at the start. I am an advocate of the porcelain filling and have been using it for five years, to my satisfaction. Yet I recognize its limitations—and limitations it certainly has.

**Indications for
Porcelain Inlays.**

The localities and conditions that chiefly indicate porcelain fillings are:

First—Labial cavities in the six anterior teeth, and buccal cavities in bicuspid.

Second—The approximal cavities in the six anterior teeth when the cavity does not extend to the incisal edge.

Third—The six anterior teeth of children, in which the tendency to decay is marked.

Fourth—In the six anterior teeth of adults having diseased peridental membranes.

First.

The ideal position for an inlay is upon the labial aspect of any of the six anterior teeth, and the buccal aspect of bicuspid, by reason of the fact that it is removed from the stress of mastication. It does not involve the use of many shades. We are not bothered with the "shadow problem," and the cement seems to receive the maximum of protection.

Second.

Approximal cavities in the six anterior teeth not involving the incisal edge are included for æsthetic reasons. If the incisal edge be involved, I consider it a dangerous experiment to solely depend upon the cement to overcome the leverage natural to a porcelain filling in this position, and in this connection I desire to emphasize the point that the retention of inlays involving a part or the whole of the incisal edge is enhanced by a mechanical attachment in conjunction with cement attachment.

Third.

One of the most perplexing problems that confronts the modern dentist today is the employment of the best method for the preservation of this class of children's teeth in which caries is riotously rampant during the "susceptible period." The best practice now recognized is the extension of the margins of those cavities to the territory which is called "immune zones," and extension of the cavity to zones of immunity at which initial caries seldom if ever begins, provided normal enamel covers that part. In the employment of gold in such cases, while the tooth may be preserved for æsthetic reasons, the larger display of metal is objectionable and the tax upon the patient is still more so.

For these reasons porcelain inlays are to be preferred to gold fillings in the six anterior teeth. Whatever may be said for or against porcelain inlays, we know by this time that decay *does not* recur around its margins. The inlay may drop out, the cement may dissolve, but decay does not recur. Therefore, it is justifiable to recommend that porcelain inlays should be employed in this class of cases, thereby saving extensive cutting and the exposure of large surfaces of metal in the anterior part of the mouth.



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'Twere better to set and reset an inlay in the class of cases described until a condition of lessened susceptibility is arrived at, than to fill the mouth with gold fillings according to the laws governing extension for prevention with its attendant tendency to recurrence of decay about gold fillings, whether placed according to said laws or not, during this period of susceptibility.

Fourth. In the teeth of those advanced in age, whose periodontal membranes are diseased so that the mal-
· leting, incident to the placing of a gold filling would produce an irritated condition, more or less inimical to the already impaired membrane, porcelain fillings should be placed in the six anterior teeth.

Gold Inlays. In the compound cavities in bicuspid* and molars, such as mesio-occlusal and disto-occlusal, I believe the gold inlay to be of far greater service than the porcelain inlay in these localities for the following reasons:

First, The anchorage.

Second, The strength of the margin.

(a) In approximal occlusal cavities the occlusal step method may be employed with advantage to the retention of the gold inlay.

(b) In gold inlays the margins are freely beveled and the edges of the gold carried over them; thus frail enamel walls may be ground down and the gold built over them, thereby adding strength to an otherwise frail wall, with no danger of crushing the material overlapping it. With a porcelain inlay in this locality the vulnerable parts would be the remaining frail wall, and, in case it were ground down, the thin edge of porcelain, which would not withstand the stress of mastication. Gold inlays in these localities are more and more being employed and their rationale becoming more and more accepted.

According to the foregoing, you will recognize the limitations of the porcelain inlay, its employment being confined to certain cavities in the ten anterior teeth for the reasons cited above.

Cement. Another reason for a plea for discrimination in its use, aside from the causes mentioned, is the lack of our knowledge of the behavior of cement in any given case. The only means of retention of an inlay is cement. Cements of the same make behave differently in different mouths. In some they dissolve rapidly; in others, less so. The space occupied by cement necessary to the retention of an inlay is, indeed, small, but there is generally a washing out about the margins of the inlay shortly after it has been set that may be traced with an explorer about the entire periphery of the inlay. Dissolution of the cement seems to cease after a certain point is

reached, and caries does not attack the margin. What causes this apparent cessation of cement dissolution? We shall need to await the investigations of the chemist.

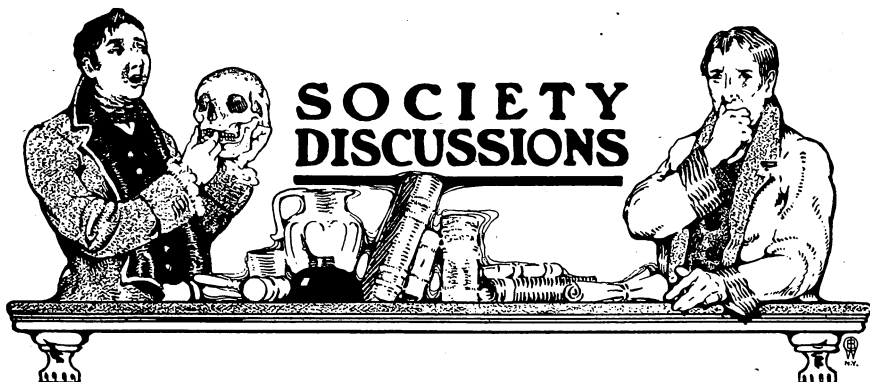
Again, the same cement will act differently under different conditions. There is a difference that should be reckoned with between a freshly made cement and one that has the stamp of age upon it. There is a difference in the behavior of cements in mouths whose fluids are neutral in reaction and those that are slightly acid.

Is it not better to proceed cautiously and wait for a longer perspective before we adopt too ardently this new idea? Porcelain inlays have come to stay and will have their place among the other agencies that are at our disposal for the service demanded of us by our patients; but they should not put to riotous confusion the friends that have stood the test of time.

"If thou hast a friend and his adoption tried, grapple him to thy soul with hooks of steel," said the immortal bard. And thus I say to you about our late friends whom the porcelain enthusiasts are trying to relegate to innocuous desuetude.

Again, the young man just crossing the threshold of our profession comes with high hopes and eager hands to try the things so loudly proclaimed from our leaders in any particular line. Too often his enthusiasm leads him to accept without question the sweeping claims of the enthusiast, and failure, accompanied with its disastrous results, is the consequence. We should be careful of our utterances in the presence of young men, and particularly is this so with this new tidal wave which is sweeping over the country. "Better stand the ills we have than fly to others we know not of" until the art is in a more perfected condition. The essential weak point of the porcelain inlay, granting that all other steps have been perfected, is its means of attachment. Until we have concentrated our best thought upon this point and evolved a method of attachment that is less liable to the ever changing conditions of the mouth, 'twere better to temper our enthusiasm with moderation, and frankly take our patients into our confidence as to the uncertainty that surrounds this beautiful work that has made for itself a place in dentistry, but still let us retain a bowing acquaintance with the old friends that have served us so well.





Second District Dental Society.

January Meeting.

A regular meeting of the Second District Dental Society of the State of New York was held on Monday evening, January 12, 1903, at the "Argyle," Fulton and Pierrepont streets, Brooklyn, N. Y.

The President, Dr. Hamlet, occupied the chair.

Dr. Hillyer moved that all business except the election of members be suspended in view of the papers and discussions to be heard. The motion was carried. The President first introduced Dr. G. N. Johnson, who read his paper, and after him the second essayist, Dr. Ottolengui. The subject was then declared open for discussion.

Discussion.

Dr. E. O. Bogue, As I was hearing the last paper read, I put down two or three thoughts. Nature gives enamel as the protection of children's teeth as well as adults.
New York.

Dr. Black has announced the doctrine that a normal tooth, however poor, is susceptible of preservation. I so heartily agree in that view that I have never felt quite like attacking the weak points in the system which Dr. Black has so grandly given us; yet I think there are some weak points in it. In case of defective enamel, whether those defects occur from imperfection in the formation of this enamel or from caries, it seems to me the principle which should underlie our filling operation is to place some indestructible something—and I care little what it is—into a cavity from which the decay has all been removed, whose margins have all been made

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smooth, and which filling material actually fills. Then comes what seems to me the most important part of our filling operation, namely: keeping those teeth clean thenceforward, and I take to myself all the blame I deserve for not having in my earliest days taught patients to keep them clean; but from that time up to now, I have tried to preach as well as practice.

I fully agree with the essayist in saying that he would cut out a cavity, at as early a date as possible. Once I am sure there is a cavity, the earlier I can cut out the better; but I could not agree with him in regard to the material used, because most of us are not such exquisite operators that we can place in the mouths of little eels (he calls them children) sufficiently good fillings to be permanent; but we can mix gold and tin. I have some that are twelve or fifteen years old. I think tin may be regarded as a material so valuable that there would be more teeth preserved with it than if we use gold exclusively. Hence I should use gold and tin mixed, rather than amalgam, in almost all cavities in children's teeth. There is a defect in that remark—I mean the occlusal cavities. In the approximal cavities I am learning to prefer a scheme advocated by Dr. Strang, of oxyphosphate and amalgam mixed together.

As I listened to the papers read by Drs. Johnson and Ottolengui, some of the old maxims that have been presented to us from time immemorial came to me: "As the twig is bent, the tree is inclined," "A stitch in time saves nine," and the story of the horseshoe nail that was lost. These all came to my mind, and I thought what an important subject this is. The very beginning of the usefulness of the denture is being discussed, and the members of our profession are doing all within their power to lay the foundation for the denture and to impress upon parents the importance of the preservation of the deciduous teeth.

Another thought came to me—how hard the medical profession generally are working in the field of hygiene, in preventive medicine, and there is no field so important as the field of dentistry, for the mouth is the focus of infection, and whoever succeeds in preventing infection through the medium of the oral and alimentary tract has accomplished the greatest thing. Infection, which is the result of disintegration of the dental pulp and the formation of dental alveolar abscesses, has more to do with infection generally than the average medical practitioner realizes. So if we did nothing more than prevent the disintegration of the teeth and the formation of pus, we would have accomplished a great work. When we have taught parents to keep in mind the importance of the preservation of the deciduous teeth, then we will follow out the old maxim, "As the twig is bent, so the tree is inclined." We will be able to lay the foundation for

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a better permanent denture, because the inflammatory processes that result from diseased deciduous teeth oftentimes make an impression upon the system that never can be effaced.

Dr. H. R. Starr,
New York.

I heartily agree with almost everything Professor Johnson has told you in regard to the treatment of deciduous teeth. Like him I place great reliance in many cases on the use of gutta percha. Gutta percha in the treatment of approximal cavities in the deciduous teeth is a very useful material in several ways, especially where we have adjoining cavities, and I frequently practice the method of filling these adjoining cavities with gutta percha, making the filling in one solid piece, using the guard of course to protect the interproximal space. The advantage of this material in its flexible condition is that it is not so apt to be absorbed, and another advantage is that it causes separation of the teeth. Perhaps it assists in the interstitial growth of the jaw and gives more room for the permanent teeth. In the majority of instances, at the time just prior to the eruption of the permanent teeth, we find a gradual separation of the temporary ones indicating that the natural growth of the jaw is going on in the proper manner, and that there will be room for the permanent ones when they erupt.

Root Absorption.

In regard to the absorption of the roots of devitalized teeth, I think this process does not go on to the same extent as in vital teeth. The normal absorption of the roots of deciduous teeth is a physiological process, but I do not think the absorption of the roots of devitalized teeth is a physiological process, and I do not think it goes on to the same extent. I recognize that it does occur—that there is some absorption—but I think it is a pathological process and occurs irregularly.

**Pulp Canals of
Deciduous Teeth.**

The great problem with me in the treatment of deciduous teeth has been the method of taking care of the pulp canals. Most of the cases which come to us for treatment of this nature are of the molar teeth. You know that the roots of these temporary molar teeth are partially absorbed at the time they require treatment. Caries has been going on for some time, and there has been some absorption. The buccal foramina are apt to be enlarged and very irregular, and I find considerable difficulty in filling those roots to my satisfaction. And I must plead guilty sometimes to the practice advocated by my old friend, Professor Abbott, of sterilizing those canals as thoroughly as possible, and leaving them partially open with a vent beneath the gum margin. That I recognize is not an excellent mode of procedure, but I have in some cases followed it with fairly good results, treating them frequently, washing out the cavi-

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ties and sterilizing them. In regard to the filling of canals I presume paraffine with aristol is as good as anything we can use.

Gold Fillings. In regard to Dr. Ottolengui's paper, I will agree with him that gold is about the best material we can use for conserving the teeth, but in the treatment of these teeth for young patients, I find it is not always desirable to subject patients to a great amount of annoyance—keeping them so long in the chair and causing perhaps this considerable amount of pain in the excavation of the cavities, when we could follow other methods with perhaps nearly as good results. I believe in temporizing to a certain extent with these young people, that they may not be subjected at this early age to such treatment that they will have fear and antipathy of the dentist thereafter. I have found oxyphosphite of copper, as introduced by our friend Dr. Ames, of Chicago, a very useful material, especially where the tendency to caries and the process of decay was rapid. If the cavities are prepared and filled with a temporary filling, with amalgam or gold and tin combined, or with gold alone, if those cases are watched and taken in time, there is less pain to the patient than in allowing the case to go on, and if caries is going to occur in those places—in the sulci—if nature excavates them partially for us, it is a saving of pain to the patient and lightens our labors to a considerable extent as well.

I want to compliment Dr. Johnson on his paper.

Dr. C. S. Stockton,
Newark, N. J. We have an impression that anything that comes from Chicago comes with the rush of the blizzard, and we do not always heed exactly what is said; but I want to say tonight that this paper is worthy of being a classic on the treatment of children's teeth. I am sure that if I should talk to you all night, I could not say more than what is in that one sentence—that it is worthy of being placed in the hands of every practitioner. I think the Doctor must have been taught dentistry in the East instead of the West, and that he got those ideas somewhere in this neighborhood. I will dismiss the Doctor's paper with this commendation.

The great point I wish to make in regard to the treatment Dr. Ottolengui recommends, is that perhaps neither you nor I am capable of rendering the service that Dr. Ottolengui can render to children. There are few men gifted with that ability to put a child through torture for half an hour, and still be able to say to that child: "You are my sweetheart." He can do it, but I cannot, and therefore I dismiss the idea that it is a wise thing to attempt to fill children's teeth with gold permanently; Dr. Ottolengui can do it, and ninety-nine others cannot. We want to do and recommend the thing which you and I, as the common people of dentistry, can do—not that which Dr. Ottolengui can do. We want to save chil-



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dren's teeth—the great majority of them—and we can do it better by using amalgam or oxyphosphate or tin. That great believer in gold fillings, Dr. McKellops, who would never use amalgam in his practice, and prided himself on that fact, filled children's teeth, if you call it filling, when they were not decayed at all; he believed in covering the occlusal surfaces with oxyphosphate of zinc and allowing it to remain there, and I do not know but that is a very good practice to pursue. The great thing is to fill children's teeth in such a manner that they are willing and glad to come and see their dentist again; but if you prepare the cavity for half an hour or more—and you cannot fill it properly with gold in less than that time—when the dentist is mentioned tears come to their eyes.

You use, and I use what we can do the best with, and let Dr. Ottolengui use what he can do the best with. That is my doctrine.

I indorse Dr. Ottolengui's position with regard **Dr. Gillette, New York.** to thoroughness—in favorable cases—an indorsement with a string to it, perhaps. The exact procedure which Dr. Ottolengui advocates comes to me as a new thought, and one that challenges my attention, and upon which I do not quite feel ready to express an opinion. It seems to me it is a procedure possibly worthy of careful study, and at first thought, probably applicable to a great many cases successfully. It seems to me, on the other hand, that there are many cases where it would not be applicable, because of the closeness of the occlusion. Dr. Ottolengui's long experience with that is perhaps more valuable than my hasty judgment.

Dr. Johnson's paper has been so ably treated that there does not seem much left to say. Perhaps I may be pardoned for telling a little story. He spoke of the odor we find in deciduous teeth sometimes, and it brought to my memory a good friend, who has passed on beyond years ago—a very modest man, who was often painfully embarrassed by the things that occurred in his operating room. One of the things that caused him great glee was the saying of a little fellow who was related to the variety of fish that Dr. Bogue spoke of. The boy had been hitching around for some time. By and by, when Dr. Jones (which was not his name) went over to the cabinet for some instrument, he turned around to his mother and said: "Ma! Ma! Dr. Jones's breath smells bad. I want to go home." After the cavities were washed out, Dr. Jones's breath did not smell so bad!

I regret Dr. Johnson did not carry his statement of the application of arsenic still further and say it should not be used in any case. That comes very near to my belief, and my practise. I question if arsenic is a desirable drug for the dental cabinet, and I think it would be for the good of our patients if it were abolished, as far as our use of it is concerned.

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Filling Canals in Deciduous Teeth.

With regard to the filling of doubtful root canals in the deciduous teeth, I have for a number of years gotten considerable satisfaction from a method which came to me through being presented before some society by Dr. Perry. I do not know whether it was original with him or not, and I do not know whether I have modified it a little or not, but in doubtful root canals in deciduous teeth, where there are, as very often occurs, good reasons for limiting the treatment—doing things as much as is consistent with safety, I have found much satisfaction from simply stuffing those canals with a mixture of iodoform and vaseline mixed quite stiff, covering it first with gutta percha usually, and then using whatever filling is chosen for the cavity, working that iodoform mixture well up into the canals, getting it to the ends, if possible, but if I cannot get it there with a reasonable amount of effort, getting it as far as I can.

Dr. Starr mentioned the making of an opening in the side in deciduous teeth. There are cases where the condition of those deciduous teeth as emphasized by Dr. Johnson is so very doubtful that I do not feel warranted in leaving a condition which may mean extreme pain for the little patient, and what is of vastly more importance than that extreme pain, the fixing in the mind of just that dread of the dentist and dental operation that has been mentioned by other speakers.

One point Dr. Johnson referred to but slightly, I wish he had emphasized more fully—in speaking of the filling of approximal cavities, occluso-approximal cavities, he mentioned bridging across the space with a bar, and he spoke incidentally of the undesirable results which follow the method of leaving out that metal support. I wish he had emphasized that more. Many of us have seen deplorable results from leaving out that metal support. I have seen cases where the mere removal of the gutta percha that had crowded down between those teeth was a more formidable operation than any child ought to be called upon to undergo, and the condition of the gum following such a procedure is sometimes very serious.

Out of the West come words of wisdom. Dr. Chas. Meeker, Newark, N. J. Johnson's paper and the remarks he has made so nearly coincide with my own that really I have no chance to discuss it.

As for Dr. Ottolengui, I think nearly all his children must be angels; I have never had the kind he has to deal with. He must have some peculiar gift about him.

I have to do the best I can with the children that come to me. I think while I may not have saved all the teeth, I have saved the children some pain. I think the spirit of economy is in all patients, unless they are very



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wealthy. With the majority of the parents (I am speaking of our section where they are more saving than in New York) if I should do those gold fillings and keep the children for an hour or two, they would say they were going to some other dentist next time, and they would, and I would lose a great deal of practice. Perhaps Dr. Ottolengui is right regarding New York.

Dr. H. B. Brockway,
Brooklyn.

I am full of the subject, but I do not purpose to say more than a word or two. I have listened to both the papers with a great deal of interest. I quite agree with the treatment that Dr. Johnson recommends, and it coincides very nearly with my own, certainly for the past few years. The importance of saving the temporary teeth cannot be overrated. I noticed one omission in regard to the treatment of children's teeth, especially very young children. We often have little patients of three or four years of age, with the temporary teeth decayed, and it is very difficult to manage such cases in the way that has been recommended generally. I was sorry to see no reference made to the simple and efficacious treatment recommended a few years ago by Dr. Stebbins, of cauterizing the surfaces of decayed teeth with nitrate of silver.

I have been in the habit of doing that for a number of years, but not so thoroughly as Dr. Stebbins recommended. My old preceptor, Dr. Westcott, did that in all cases where the cavities were slight. I have practiced it in the treatment of very young subjects since Dr. Stebbins brought it to my notice with very satisfactory results. A point made by Dr. Starr, I think, in reference to the treatment of those teeth with gutta percha, is quite important—the value of the pressure of the gutta percha between teeth where it is used to bridge over contiguous cavities. The pressure which that exerts is of great advantage in keeping the jaw sufficiently large for the eruption of the permanent teeth. It not only keeps it the natural size, but it is my impression that it also expands it slightly, and that is of course a great advantage. When the permanent teeth come in, they frequently are crowded for lack of room, and that overcomes the undesirable condition to a great extent.

I do not see in the arguments of Dr. Ottolengui in regard to the treatment of teeth with gold any advantage over the use of amalgam in many cases; but I see a very marked disadvantage in the use of gold in children's teeth—by children I mean young subjects up to fourteen years. I do not think it is a desirable practice, as a general thing, to use gold under that age, for the reason that has been mentioned—that it subjects the patients to too great a physical strain. It is unnecessary. I prefer to use something that is sufficiently serviceable to bridge over the period

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of adolescence until the teeth and the patient are in better condition for lasting operations.

I will say just at this point that I do not believe there is more advantage in gold itself, no matter how perfectly it is used, than a good amalgam used with equal care. I have never seen anything to make me think it was better.

**Dr. Wm. Jarvie,
Brooklyn.**

There have been one or two points that have not been dwelt upon in the discussion, that I would like to bring out before the subject is dismissed, and I will be as brief as possible. The first is in reference to the treatment of the deciduous molars. There is one class of these deciduous molars, and their treatment, that was not touched upon, and that was the molars in quite young children—badly decayed pulps almost exposed, the teeth so sensitive to mastication that the child is in the condition Dr. Johnson described—bolting the food rather than submitting to the annoyance and pain of mastication. Such children are nervous and fidgety about anything being done to their teeth, and we are often puzzled as to how to treat them. I have found that copper amalgam is the best thing I can use. It is the only class of cases in which I use that material. For cavities such as I have described, simply dried, as well as possible, and even not completely dried, copper amalgam mixed quite soft may be used; that can be placed in the cavity in a moment, and patted down without any force whatsoever, and will in the great majority of cases make the teeth perfectly comfortable for the child for the length of time necessary to keep them in the mouth. I speak of the use of this material in that one class of cases; otherwise I should follow the manipulation outlined by Dr. Johnson tonight.

I think almost every speaker has disagreed rather radically from what Dr. Ottolengui has given as a proper mode of procedure in certain cases. Dr. Ottolengui has not said that he fills the sixth year molars of all children in the manner he has described. He leaves out that class of children who are extremely nervous, who are ill-behaved from whatever cause—from fractiousness, from ugliness, from being very timid, or from being so sensitive that it is almost impossible to do anything with them.

That class of cases I do not think he attempts to fill with gold; but there are a great many children under fourteen years of age who have cavities such as he has described, in the sulci, not badly decayed, where the rubber dam can be applied very readily indeed, just on that sixth year molar, with the New Idea clamps, and they will stay just where they are put on, even on the short molars. Then with the finest rose bur, just as he has told you, it is a comparatively easy thing, with many children, to



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cut out the cavities and fill them as he has described, without any strain upon the child.

All children are not such as the gentlemen have told us—going to the dentist crying and weeping and dreading. Many children come to my office and they are no different from those that come to you. They come with a smile, and they do not dread it a bit. Let me cite the case of a child eight years old: A lady who knew her, was sitting in my reception room and she commenced at once to sympathize with the child, saying how sorry she was she had to have her teeth fixed; but Dr. Jarvie was very gentle, and would not hurt her much. If you knew the child, with her great large eyes, you could appreciate better the expression that grew upon her face, and finally the youngster said: "Why I like it; I like to have my teeth fixed." So you see they are not all of the class that has been mentioned. The class of children and the class of teeth that Dr. Ottolengui has described, can be readily filled with gold, and those fillings are permanent fillings.

One thing that has not been brought out tonight in the discussion, and I would like to note it is, never use amalgam as a temporary filling. If you must put in a filling to bridge over a period of one to five years, use either gutta percha or oxyphosphate, but do not use amalgam. The deep depressions in children's teeth, if the teeth are very sensitive, can be filled with oxychloride or oxyphosphate, or if they are not so large, they can be filled with gutta percha which will not discolor the teeth, and when the time to remove that filling comes, you will have the dentine under it clean and usually hard.

I forgot to mention a fact which Dr. Jarvie reminds me of—that Dr. Jessel, of Stockholm, read a paper last summer on a method of filling roots, which to me was entirely new, and Dr. Jarvie says the same. It seems to be especially applicable to deciduous teeth. Cotton is put into a vacuum and is carbonized. It does not entirely lose its fibre, but it is to all intents and purposes charcoal. He fills roots with that. I saw a number of roots filled with it, as near to the apex as any roots I have ever seen. The carbonized cotton or charcoal is moistened with any antiseptic you wish to put there—carbolic acid or pyrozone. It stays there as long as you wish it to remain.

If we would all confine ourselves to excavating
Dr. Shields, New York. the decay in sixth year molars at a time when the child can have the decay removed, and fill the cavities and the fissures with a proper instrument with soft gold wedged in mechanically, we will have good results. If instead of tin you will use soft gold, you will save the discoloration that almost always accompanies tin.

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Dr. M. E. Rhein,
New York.

It is hard to resist saying something at a Second District Society meeting. The subject before us tonight is one that should enlist our sympathies and earnest attention a great deal more than has been customary. I believe that the thanks of this entire meeting are due to the committee who suggested this title to Dr. Johnson for his paper. I believe it is a very timely subject, and one that has not been sufficiently probed. The discussion this evening has tended to prove that fact. Now in reference to children in general, I agree with one of the remarks of Dr. Jarvie, that this idea that it is a hardship for children to come to the dentist is a mistake. Where the child is afraid, it is an impression conveyed to the child before it has ever visited a dental office, and one that it is necessary to eradicate the first time we are brought in contact with the child. There is nothing more important in the dentist's daily work than the care of the child from the very earliest period. I know that it is the habit of a great many distinguished operators to relegate the treatment of work upon the deciduous teeth to an assistant or an associate, and I think it is a very wrong procedure. I look upon the work upon deciduous teeth as the most important that falls into my hands, and I believe that I echo the sentiment expressed in the paper of Dr. Johnson that if we are to care for the permanent teeth of our patients, we must leave our impressions at an early age, and instill into our patients at that time the ideas we wish to convey. If the children are brought to us at an early age, it is much easier to do that. It is hardly in keeping with this body to enter into the subject of how to handle children. Each child is to be judged separately and studied separately, but it certainly is our duty to make that child's visit one of pleasure and not of torture.

To come to one of the practical points in the admirable paper of Dr. Johnson, I would like to strongly emphasize my approval of the use of the oxyphosphate of copper in these teeth. I have used this material for a sufficient number of years to feel that there is nothing that has come into my hands that answers the purpose of a filling material in deciduous teeth so well as the oxyphosphate of copper.

Another point in regard to deciduous teeth and their treatment—when they are pulpless, and when we have these pulpless teeth distinguish themselves by a chronic form of abscess such as described by Dr. Johnson, I am in favor of extracting such teeth at a period earlier than they would normally be removed, in order to guard as much as possible against the danger of its continual flow of pus upon the eruption of the permanent teeth. I am convinced that the enamel of bicuspid has been frequently injured through the fact of a chronic alveolar abscess in the deciduous molar remaining for two or three years, and I believe the



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lesser evil is the removal of a deciduous molar where there is a chronic abscess, that seems to be incurable.

I do trust we will hear more in the future of the subject of the treatment of deciduous teeth.

I desire to avoid the discussion of Dr. Ottolengui's paper, because I find myself somewhat in this position: I agree with a large portion of his paper, and I disagree with a larger portion of it! That it is advisable, as Dr. Jarvie has stated, to frequently make a permanent gold filling in the first permanent molar of a child, is to be granted; but in my experience, I believe that the number of children where that is advisable is very much in the minority. I do not believe they are in the majority at all, and I have some reasons in addition to those that have been expressed.

In children from five to fifteen years, we frequently find such a condition or environment, that all the hygienic measures we try will not stop the constant inroads of caries. Of course, at some time we reach the age when we know that stage has passed, and that the permanent filling of such teeth is satisfactory. It is not at all uncommon when I find the occlusal surfaces of molars of this kind requiring filling, to fear very strongly that the approximal surface is going to be decayed. Take all the measures of prevention we may—we fear it, and we find the result warrants our apprehension. In such a case as that, I should disapprove of a gold filling on the occlusal surface. If I thought that later I would have to fill the approximal surface, I would prefer that the permanent filling of such a tooth should be made at the same time.

I am going to say also that I am opposed to the principle laid down by Dr. Jarvie, that a temporary filling should never be an amalgam filling. For twenty years I have practiced the method of filling occlusal cavities of sixth year molars precisely as Dr. Ottolengui has outlined—that is, filling the sulci excavating them as closely within the lines of the caries as possible, and then bringing the filling up and overlapping the surfaces of the enamel as high as the occlusion will permit, and I have done this with amalgam, placing the amalgam in position as a temporary filling at the time. In many instances I have never had any excuse for removing that amalgam after the patient has passed the age of twenty to twenty-five years, although the filling has been in position frequently for fifteen or eighteen years. I have seen them in position for fully that length of time. When amalgam is placed in this way, and when it is properly used, there is no reason why it should not stand all the necessary stress and strain. The very same reason that may necessitate a second filling of gold, will necessitate a secondary filling in a tooth where amalgam has been used for the initial filling, but it leaves us in the position of having

not placed our patient under the strain of having had a gold filling inserted. One of the points to be emphasized, that is certainly a very strong objection to the insertion of gold at too early an age, is the shock produced on the tooth—I do not refer to the shock produced on the patient—but the shock the tooth receives from malletting at that age. In a certain class of teeth, this is not a desirable practice, nor a good thing for the dentine of the tooth and it is far better avoided.

In closing I want to say that the class of cases where Dr. Ottolengui's method is unquestionably a good one, must be left to the judgment of the operator. There is a class of cases where one can readily put in a gold filling and make it at once a permanent one, and for that class it is by far the best method to pursue; but I believe those cases are limited.

I just want to return to Dr. Johnson's paper a moment, to speak of something that has not been brought up, in reply to one of the points alluded to by Dr. Johnson—that is, the use of the rubber dam in deciduous teeth, and in children. In ninety-five per cent of the children whose teeth I fill, whether deciduous or permanent, I apply the rubber dam, and I find it does not annoy the patient, but they rather enjoy it. I say that advisedly. I give them the saliva ejector with it, as a rule, and it is as much a plaything to a child, if properly handled, as anything can be. That is the object to be desired—to make the dental operation appear not in a serious light—that while you are at work seriously, the child should, if possible, find it pleasant. Between stuffing a child's mouth with napkins and applying the rubber dam, as far as most cases go, I believe the application of the rubber dam is far more pleasant to the patient, and the only reason why you may question this is because you have perhaps not given it the trial it is entitled to.

I just want to say a word about Dr. Johnson's paper. I want to begin where Dr. Rhein left off, because that was really a funny wind-up. I said in my paper that I fill ninety-five per cent of the sixth year molars with gold, and I have been pretty well ridiculed for it; Dr. Rhein says he puts the rubber dam on about ninety-five per cent of his cases, and he got as much ridicule as I did. Now what is the moral of that? Dr. Rhein said those who ridiculed him had perhaps not tried it. Years ago I heard Dr. Rhein say he used the dam on ninety-five per cent of his patients; then I increased my percentage until I felt I could say I used it in ninety-six per cent, and that brings me to Dr. Johnson's paper. Deciduous teeth are not nearly so sensitive when the rubber dam is used. They need only to be kept dry to be handled. Those cases with approximal decay are exactly the ones where the most comfort to the patient is secured by the rubber dam, be-



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cause it covers over that little inflamed septum of gum that lies between, and it is the touching of that that hurts the child a great deal more than the actual touching of the exposed pulp. If you have that gum pushed down by the rubber dam, out of the way, and have the cavity clearly exposed, and put the instruments just where you want them, so far from ridiculing the use of the rubber dam, you will thank your stars you have heard of it in connection with children's teeth.

In regard to exposed pulps, my experience is the pulp is either so badly exposed that it will die anyhow, in which circumstance it is only necessary to keep it comfortable until it does die, or else it is the only class of pulps in which we can practice pulp capping, because if you cap the pulp of a temporary tooth, which is not badly exposed, it will give no pain. One of two things must occur: either it will live, which is desired, or it will die, which will render its removal easier. I cap by simply flowing over the exposure chloro-percha which I mix with eucalyptus, and then place a little convex metal cap over it and then fill with amalgam. That is a very nice place for amalgam.

I think Dr. Johnson has made a mistake in bringing us a paper with which we can all agree.

Dr. Johnson. I want to discuss first of all a few things in Dr. Ottolengui's paper very briefly. One is in regard to the relative value of gold and amalgam. Intrinsically there is a vast difference between the two. One of the main differences relates to the difference in strength to given bulk. Amalgam will not sustain the same amount of force without fracture, as will gold in a given bulk, and in the class of cases Dr. Ottolengui has outlined, in which he would build his gold beyond the margin of the cavity, over the enamel, and where Dr. Rhein would use amalgam I should expect the edges of amalgam to break down very early.

If we stop to think of the power that the muscles of mastication are capable of exerting, the amount of stress necessary to force the molars through a piece of average beefsteak (to say nothing of the proverbial boarding house meat) we will see that the strain upon the fillings may become very great. The human jaws are capable of closing with a stress of three hundred pounds and more upon the molars—not that we get that force in the average mastication of food, but that extent may be brought to bear upon our fillings through having bits of bone caught between the teeth, or shot in game, and we must provide against those emergencies. There is that intrinsic difference between the two materials that enters as a factor in the decision as to which material we should use for permanent results. I should not expect good results from amalgam, provided

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I carried it over the edges to the extent that Dr. Ottolengui has outlined. This is also a factor even with the use of gold in those cavities—the thinness of the edge of the filling material in many cases where the cusp of the opposing tooth tips down into the fissure, as was mentioned. We may have failures of gold fillings absolutely aside from anything connected with the cavity—aside from the recurrence of decay; from leakage of the walls; from the breaking down of the material itself at the margin; and that would limit me to a very few cases where I should deem it advisable to build the gold over the enamel to any extent from the true cavity border. It would only be in the cases where the dip of the enamel was very sharp, so the relative strength of the gold would offset that and give me a strong border to the filling.

Just one word in commendation of Dr. Bogue's reference to tin and gold. As Dr. Bogue made that statement, Dr. Rhein turned to me and said (and I hoped he would make the statement to the society): "Do you use tin and gold?" and I said, "Yes;" and he said he thought it was the worst thing to use. It would give me pleasure to have Dr. Rhein in my office and show him a filling that has a history; the gingival third was filled with tin and gold, and the rest filled with gold, in an extensive cavity in an upper bicuspid, filled twenty-five years before I saw it. The filling had done good service all those years under the stress of mastication, until the tooth fractured and commenced to give way and the case came to me. The character of that material after those years of service, I believe would have convinced Dr. Rhein that there is virtue in the combination mentioned. That filling was put in by Dr. Allport, of Chicago, a man to whom I want to pay a tribute as an operator. It was put in for his son. Tin and gold can be used in molars and bicuspid in the small cavities most successfully. I can put it where I cannot put gold. I do not say Dr. Ottolengui cannot put gold there, but I can put tin and gold there without the rubber dam, and some of my patients, even when they have lost their deciduous teeth and are old enough to have all the permanent teeth object to the rubber dam. In small occlusal cavities I am able to insert tin and gold (and I say this advisedly) much more easily than I can insert amalgam. Some gentleman has mentioned the virtue of non-cohesive gold in those places. Another gentleman has said something about tin, instead of tin and gold. The virtue of the combination, that I do not see in gold alone, or in tin alone, is this: that when you first insert them in the mouth, you can distinguish between the tin and the gold. After they have been in the mouth a short time, you cannot distinguish the difference. They become a homogeneous mass. The character changes absolutely, and gives a product very much harder and more re-



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sistant to the stress of mastication than it was when we placed it. It is the growing hardness of it that makes one of its chief virtues for me. I began the use of it with the idea that it was temporary—that I should after a while employ gold in the small occlusal cavities; but many of them have gone on eight, ten, twelve or fifteen years, doing good service, and I have not been called upon to take the tin and gold out and insert gold.

I also want to say about Dr. Ottolengui's paper that I have a theory, as I said at Montreal, when Dr. Ottolengui read a paper there on this subject. My summing up is that every man is in duty bound to use that method which in his hands gives the best result. He must use judgment and view this matter from his own standpoint, and not from the results other men attain. If one man can do better service with one material and still retain the love and respect of his patient than he can with another, it is manifestly his duty to use it. If another man can do equally well, or better with another, it is his duty to use that material which in his hands gives the best results; but there is this one fundamental thing connected with the question: We are not justified in doing an operation for a patient, if we can avoid it, that has any tendency to break down the nervous system of the patient or place in the mind of the patient a dread of dental operations. Sometimes I think I spend my greatest energy trying to heal over bad impressions made upon patients before they come to me. Neither are we justified in doing temporary operations, when we can do permanent ones. There is this feature about the temporary work that I want to refer to: Temporary work has an evil effect that we do not always appreciate. It has the effect of creating in the minds of people the impression that dental operations are not very permanent and not profitable, and if a patient has to come back again and again, he naturally gets the impression that dental service does not amount to much. If you place a gold filling as Dr. Ottolengui would do in a molar, and make that operation permanent, and the patient realizes that the operation is doing good service, it creates respect for dentistry, and while we are not justified in breaking down the nervous system or the courage of a patient by injudicious fillings, we are not justified in doing temporary work when we should do permanent.

As to my paper, Dr. Jarvie spoke of cases where there was extreme sensitiveness or nervousness of the patient, and a general bad condition in the mouth. I have found that where we have pulps exposed, under those conditions, and very sensitive, an application of ninety-five per cent carbolic acid will give immediate relief—as quickly as anything I know of. I should simply protect that pulp with the paste I referred to, and flow over that either oxyphosphate of zinc or oxyphosphate of copper. I formerly used the oxyphosphate of copper because I saw such excellent

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results with it in Dr. Ames's hands; but lately I have not used it so much, and Dr. Rhein has asked me to explain why. There comes in the question of personal equation. I can manipulate oxyphosphate of zinc better than the other, and so I cannot take the same liberties in those peculiar cases that Dr. Jarvie has referred to, as I can with the oxyphosphate of zinc; therefore I do not use it in those cases.

Dr. Jarvie. If I said the pulps were exposed in those cases, I did not mean it; I meant exceedingly sensitive cases where the pulps were almost exposed.

Dr. Johnson. I understood the pulps were exposed. Oxyphosphate of copper in the hands of those expert in its use is an excellent material in deciduous teeth; but I cannot handle it as Dr. Ames does; if I could I would use it more.

Dr. Ottolengui. I think I have something of the same temperament that I attributed to Dr. Johnson, and far from being disappointed at the many criticisms I have received this evening, I have been rather pleased—more pleased than you can possibly imagine; because I see a chance to make a proposition to the gentlemen of this society, which will very much lighten the labors of my declining years. I find that nearly all of the men present believe that the treatment of children is the bad end of their practice. I find it the very pleasantest part of my practice, and if I could feel sure that all of you gentlemen would send your children to me, I would promise never again to practice on adults. I will be pleased to take them all off your hands, so you need not have any more trouble with them, and I will send you one “grown-up” for every child you send me. I want to draw the line between Dr. Bogue's eels and Dr. Meeker's angels. The children that come to me are neither; they are just plain little boys and girls. As far as eels are concerned, it has been my experience that those who catch eels are those who go fishing for eels. Most of my fishing has been for trout, and I never saw an eel rise to a fly!

If you look at your book and say: “Master Jones is coming tomorrow; he is one of those eels,” of course there will be an eel. I will give you a little idea that helped me, and will help you: cease to look upon your children as children, and consider them as little men and little women, and then you will be dealing with adults right along, and you will not have such awful difficulties. Allusion has been made to the fact that it might be sufficient to simply remove the decayed portion of the tooth, and rather than cut out the decayed sulci, await the time when it might decay and then cut it out. Exactly the opposite has been my practice. I do not wish to be unscientific enough to say there is inflammation of tooth bone, but normal, undecayed tooth bone is not so sensitive as carious tooth



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bone. If there is caries in the little pit at the bottom, that is the one sensitive part. If I can have that cleaned out, if I can break down the edges, the cleaning out of the sulci is a matter of pleasure between me and the youngster. We have no trouble.

One more word about occlusion. It seems perfectly rational, when you think of teeth in general, and the close occlusion of most teeth, for you to think you cannot build up to any such extent as I have suggested. I want to call your attention to a fact in this matter. I have been describing the filling of cavities in the sixth year molars very early in life. Very often I fill those cavities prior to the appearance of any of the secondary set—before even the centrals are erupted. At that age they are still fully developed teeth. There have been no roundings off of the cusps; they do not very frequently occlude as cogwheels do. The longer those teeth remain in the mouth, the more attrition there is, the closer the occlusion, until at the time of senility, the two teeth may be abutting end on end with both surfaces in absolute contact throughout. But that is not the case with very young people. You will be astonished to find that you can build up to an extravagant extent, and have very little to cut away; much less at the age of eight or nine than at a later age. The contact gets closer as they grow older. That is another argument in favor of the gold being put in early. The building up of the teeth with gold, thereby giving you a contact between the lower and the upper—those gold fillings being in actual contact, really act as a stop to the abrasion that goes on usually. I have patients for whom I did this kind of work at the outset of my career, and I have frightened them so much that they never went anywhere else, and are now bringing their own children to me.

I think building up those sixth year molars and following it up with the twelfth year molars, getting the contact of the gold in both jaws, will prevent a great deal of wear from attrition.

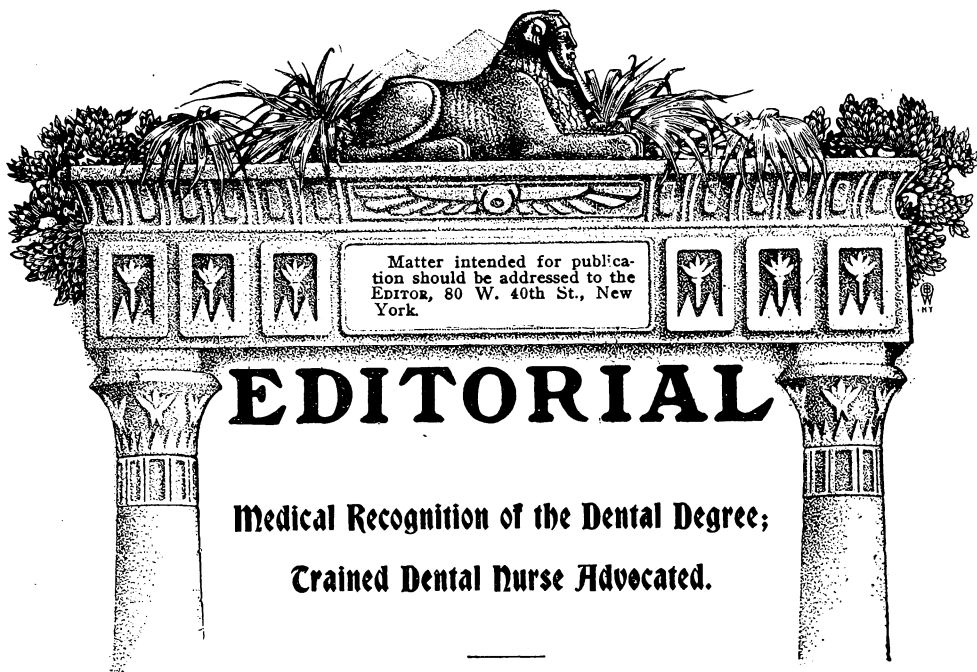
I want to give the story of a little girl for whom I lately did work. She has been in my hands since she was four years old. I regulated the teeth of her sister, and she used to come along sometimes with her and have her teeth cleaned. She had a protrusion of the upper incisors of the temporary teeth, and I took models of her mouth. She has come back to me each year, and I have taken models of the mouth, with the idea later on of being able to add something to the unknown facts of the etiology of this subject. I have a series of models. She calls that having her "expression" taken. I have become pretty familiar with that little child. She has had a very cleanly mouth, and I have not had occasion to put a filling in any of her deciduous teeth. Consequently I have only taken these "expressions" as she calls them, and cleaned her teeth. The sixth year molars came in in due season. Her permanent central

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incisors are just erupting. That indicates her age. I found on examination last month that there was the beginning of cavities in the four sixth year molars—the largest one in one lower molar, the next largest in the other lower molar, and very minute cavities in the upper. Almost the first thing she said to me was: "Isn't this going to hurt horribly?" I said: "Why, no; what makes you think so?" She said: "Well, the last time sister was here she said it hurt her horribly." Now everything hurts her sister "horribly," and she was bad enough to tell her little sister so. I could not put the rubber dam on (this is one of the four per cent where I cannot) but I did not see that child wince. Once when I was putting in the gold she did wince some, but she sat more or less still until we got it all filled. I selected the smallest cavity to fill first, of course. She went away, and I was not quite certain whether I had hurt her much, or not, and I could not understand why she winced. The next time she came in she said to me, "Mamma says you must not twist my mouth out of shape. It took me half a day to get it back in shape again." Then the thought came to me, and I said, "Was that why you said I hurt you?" and she said, "Yes; you had your finger in the corner of my mouth." We filled the other teeth without the slightest trouble, and when she was going out she said, "I told sister she is a story teller; it didn't hurt me at all." When I came to the larger lower cavities I told her I would put in a temporary filling till the autumn, and she replied at once, "Ah! Go on! Fill them with gold, and be done with it." And I did.

When I have experiences like that right along, you understand why I receive your ridicule with perfect equanimity. My children do not despise me, and they do not come back with fear and dread. Why is it? Do you not think it may be because you are not doing this class of work yourself, and you do not know whether it will hurt or not? Perhaps you do not know the ease with which you could put gold in those teeth. I would much rather fill a tooth for a child of eight than for one of fourteen.





At the recent meeting of the American Medical Association there occurred two events which show a trend towards a more intimate co-operation between the medical and dental worlds. The more important of these was the recognition of the dental degree, as announced by Dr. Talbot in this issue; the other, interesting because of its novelty and importance, was the indorsement of Dr. M. L. Rhein's proposal that trained dental nurses should be educated and legally authorized to do specified work about the mouth.

Slowly but surely our medical brethren have **D.D.S. Recognized.** been approaching the moment when they might recognize dentists as co-workers in a common field. The passage of the resolution by the American Medical Association which admits the D.D.S. to membership in that body, should be gratifying to all practioners of dentistry, as a compliment, though, of course,



a well merited one. This act, however, leaves the word Stomatologist a little more difficult to define than ever. Heretofore, while there are a number of purely dental organizations in which the word "Stomatological" occurs, perhaps the only true Stomatologist was the holder of the medical degree who confined his work to dental and oral operations, and he was especially entitled to the designation were he a member of the Section on Stomatology in the American Medical Association. Now that plain practicing dentists are to be admitted to the Section on Stomatology, the distinguishing line fades. Why not complete the recognition of the dentist by recognizing dentistry? Why not a Section on Dentistry?

**The Trained
Dental Nurse.**

At this same meeting Dr. M. L. Rhein in his address, delivered as chairman of the section, advocated the introduction of the trained dental nurse in the following language: "It would be an easy matter to add to the training schools for nurses a department of dental nurses. Applicants for admission to such course should be required to pass a satisfactory preliminary examination. Outside the general didactic instruction which they would receive, they should obtain additional instruction in regard to the oral cavity from a dental member of the school's faculty. They would also receive their manual training under the same supervision, and in the hospital material they would find ample opportunity for perfecting their working technique."

The author of this idea further explained that these nurses, after graduating from a training school, would be expected to pass a licensing board, their license permitting them to practice just that special work for which their training had fitted them. Such nurses might obtain permanent positions in hospitals and in time would be of assistance in the training of undergraduates. They would undoubtedly be of great benefit to the general health of the hospital patients if they could maintain a high standard of oral hygiene, and an approach to sterilization of the oral cavity. Those who did not care for hospital practice might accept positions in private offices, and could the general practitioner of dentistry obtain such specially trained assistants to take full charge of the cleansing of teeth and mouths, there is little doubt that such work would be better done than now and that the whole community would benefit.

The Section on Stomatology adopted a resolution indorsing the





proposition of their chairman and recommending that State Dental Societies should endeavor to have suitable legislation passed to legalize this class of work.

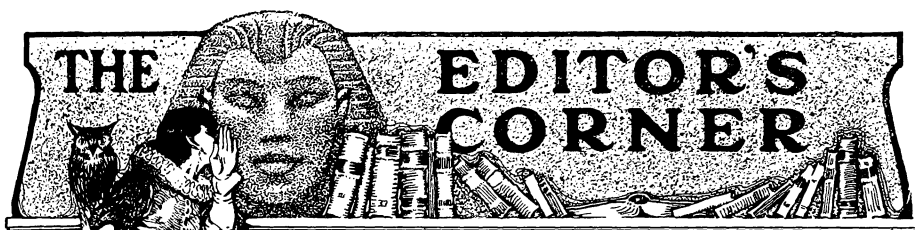
Almost immediately after the meeting of the Medical Association, Dr. Rhein presented a similar paper before the New York State Dental Society, and again the idea was favorably received, that body instructing its law committee to endeavor to have suitable amendments made to the dental statutes.

New Jersey Dental Law Sustained.

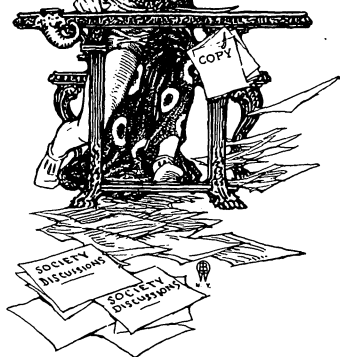
The Supreme Court of New Jersey, deciding a case on appeal, the appellant having been convicted in a lower court of practicing dentistry illegally, has just handed down an opinion sustaining the dental statute. The following is a syllabus of this important decision:

1. The act,, approved March 17, 1898, coupled with the previous legislation on the subject, is not unconstitutional.
2. The act does not impair vested rights, nor is it, in its criminal provisions, an *ex post facto* law.
3. A calling, business or profession is property. The Legislature cannot destroy it by statute without providing for compensation, etc.
4. The act of March 17, 1898, is not an act taking or destroying property, but is a reasonable regulation of the practice of dentistry in this State.
5. It is within the power of the State, under police power, to impose by statute reasonable restriction as to registration and the obtaining of a certificate of authority to engage in the practice of dentistry, and to make it a misdemeanor for a person to practice without first obtaining such certificate.





WITH MALICE TOWARD NONE—WITH CHARITY FOR ALL.



Notwithstanding the fact that there are numerous methods of using removable porcelain facings in bridge work—that is to say, facings which are not attached with solder—it still frequently occurs that the teeth are soldered to the fixtures; indeed in some instances, in spite of the risk, it may seem to promise better results. In a bridge thus constructed this winter a facing was subsequently broken off and its replacement may be of interest to

others who may find themselves in similar predicaments.

Restoring Facing to Fixed Bridge.

The bridge was made to extend from the cuspid to the second molar, but as the latter tooth had moved forward since the loss of the natural teeth, there was room only for a very narrow tooth backing of the two bicuspid, which were necessarily used for the sake of appearance and occlusion. As both the abutments were living teeth, the bridge was made to extend into cavities at each end, the spurs being secured by gold fillings. The bridge, however, had additional support on the second bicuspid root which was still in position and in good health. Cuspid facings were used and the occlusal ends thoroughly protected by having the gold extend over. Nevertheless, within six months, the patient returned with the narrow facing broken off; this was the one nearest to the molar. At first the difficulty seemed almost unsurmountable—that is, what might be called the backing was really an almost fully contoured solid gold bicuspid having been extended for the sake of the occlusion. A study of the case made it apparent that to drill two holes for the reception of Bryant repair nuts was impracticable, partly because they would necessarily be so close together that one would impinge upon the other; also because the structure would be too much weakened. This problem was finally solved in the following very simple manner: A single hole



ITEMS OF INTEREST

was drilled and reamed out for the reception of one Bryant nut; the posterior pin of the facing was cut off to about half its length and a small hole drilled for its reception, this hole being only deep enough to receive the pin and not passing through the backing. The facing was then cemented to place in the usual way and the Bryant nut firmly set, the whole being perfectly secure as the second pin served as a security against rotation of the facing.

**Leg Injured by
Tooth Extraction.** A somewhat remarkable claim has been set up in a suit brought against a New York dentist. Damage is being asked for injuries to a jaw and also to the patient's right leg, received as a result of having a tooth extracted.

In a pamphlet on the boy's case, which was read before the Harlem Medical Association on Dec. 3 last, Dr. J. A. Hofheimer says that "having complained of a severe toothache on the preceding night, the boy was taken to the office of a so-called 'painless' dental company to have the offending molar extracted. The dentist removed the first molar from the right side of the lower jaw, but in doing so used his energies in such a way as to cause a stellate fracture of the jaw. An abscess formed about the bone, the boy's temperature rose steadily and he became very anæmic, with severe pains in the right leg, especially about the groin, and frequent chills and fevers. Two weeks after the injury the boy's right leg became useless. An enormous abscess formed on the leg, and on incision it was found that blood poisoning had set it. The limb took several weeks to heal, and meanwhile another abscess formed under the right shoulder, which was also operated on and evacuated. A month after the injury a large abscess on the jaw was opened and ten days later the boy's condition became convalescent, the ulcer on his mouth beginning to heal. Ultimately an examination was made and an operation performed in which a large piece of diseased bone was removed. The health of the boy is now good, but he walks with a slight limp owing to an atrophy of some of the anterior muscles of the right thigh. It is believed that under massage and calisthenics this condition will improve."

**Dr. Holly Smith
a Horticulturist.** The *Baltimore Sun*, in a lengthy article upon the successful cultivation of flowers by amateurs, states that Dr. Holly Smith has been peculiarly successful along these lines. The paper gives the following account of his garden.

"Dr. Holly Smith has about 3,000 rose bushes on his place, embracing 150 varieties. Many of them are out in bloom now and are filling the air with their fragrance.

EDITOR'S CORNER

"'Raising roses,' he says, 'is like raising dogs. It costs no more to raise a thoroughbred than to raise a mongrel. The pride of carriage, the beauty of form, the sureness of instinctive performance are all gratifying to the master, and not the less so because these qualities demand special care for their development.'

"He has his roses planted in long trenches, and he has found it advantageous to do this because he has found better drainage. 'The habits of roses, as Dean Hole would say, make them fond of a drink,' he explained. 'But they don't like wet feet. So in a clay and soggy soil I have found it best to plant them in trenches.'"

The following has been received from Dr.
Reply to Dr. Kells. Custer:

"Dr. Kells and I are not discussing the same the same thing. The Tesla coil operated upon the alternating current is quite a different appliance from one operated by an interrupted current produced by a revolving current breaker upon the direct current. I have repeatedly stated that while I was led to purchase a Tesla coil by the excellent results shown by Dr. Kells at the National dental meeting at Niagara Falls, yet, when I had installed the same, I found it to be a miserable failure when an attempt was made to operate it upon the direct current in the manner provided for by the manufacturer, L. E. Knott. I did not learn the difference except by an expensive experience. All that Dr. Kells says for the Tesla coil when operated upon the alternating current is true, and what I say of the same instrument when operated upon the direct current by a break wheel is also true."

As Dr. Custer did not in his original article speak of using the Tesla coil on the direct current, Dr. Kells's communication was apparently in order, as is also the above explanation from Dr. Custer.

That the Interstate Dental Fraternity is destined
Interstate Dental Fraternity Still Growing. to be one of the most popular dental associations is attested by the rapidity of its growth. At the May meeting the members elected carried the list above the one hundred mark and branches were organized in three new States. Dr. Burton L. Thorpe was elected vice-president for Missouri; Dr. John F. Dowsley, vice-president for Massachusetts, and Dr. George A. Esterly, vice-president for the State of Kansas. The probabilities are that at the June meeting, which will be the last prior to Ashville, at least half a hundred more members will be admitted, over thirty having already been nominated by the Illinois branch. The first annual meeting, therefore, at Ashville should prove most attractive.



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Resignations from the New Orleans College.

The following resignations from the faculty of the New Orleans College of Dentistry have been reported: Wm. Ernest Walker, D.D.S., M.D., Dean of the Faculty, President of the Board of Directors, Professor of Orthodontia and Facial Orthopedia, Microscopy, Bacteriology and Clinical Dentistry and Demonstrator of Operative, Orthodontia and Facial Orthopedic Technics; Hermann B. Gessner, A.M., M.D. Treasurer of the College and Professor of Anatomy and Surgery, General and Oral; Jules J. Sarrazin, D.D.S., ex-Dean, Professor of Dental Anatomy, Operative Technics and Operative Dentistry; and Otto Lerch, A.M., M.D., Ph.D., Professor of Physiology, General Pathology and Hygiene, have resigned from the Board of Directors and the Faculty of the New Orleans College of Dentistry.

Governor A. Chamberlain, of Connecticut, appointed on March 19, 1903, for Dental Commissioners to serve for two years from July 1, 1903:

Dr. Edward W. Pratt, president, East Hartford; Dr. William H. Loomis, Rockville; Dr. J. Tenney Barker, recorder, Wallingford; Dr. William E. Hyde, Danielson; Dr. Horace Bascom, New Haven.

On May 1 Dr. Wm. E. Hyde sent in his resignation to take effect immediately, and Dr. Theo. S. Rust, of Meriden, was appointed for the unexpired term, and for two years from July 1, 1903.

Dr. Horace Bascome also resigned, his resignation to take effect on July 1.

New South Wales Dental Defence Association.

One of the largest and most unanimous meetings of the dental profession which has taken place in the City of Sydney was held at the Manchester Unity Hall on Tuesday, Nov. 11, 1902, to consider the advisability of taking steps to form an association for the purpose of mutual protection and support.

Sir James Graham, M.D., president of the Dental Board of New South Wales, occupied the chair, and was supported by Mr. Edward Reading and other members of the board. There were present besides other dental notables Dr. Leopold Carter, Dr. I. P. Cliff, Dr. Stanley Rea, and Mr. Donald Smith, secretary of Odontological Society.

The chairman said that it was a matter of history that this State was the last part of the civilized world to realize the enormous risks which were run in allowing the profession of dentistry to get into the chaotic state that existed until quite recently. The passing of a measure, through Parliament, gave the public some guarantee of a change in this condition. But the Dental Board, brought into existence by that act,



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had no function and no jurisdiction but that which was provided for it within the four corners of the measure. The time was not far distant when the constitution of the board would be placed in the hands of the dentists themselves. The legislation, however, useful as it had been, was no adequate guarantee to the public, and it was hoped that before long Parliament would be induced, in the interests of the people, to amend the law, so as to further guarantee the professional qualities of the dentists registered under its provisions. This meeting was called for the purpose of establishing an association, having the interests of the public in view and for the purposes of professional interests. It was known that dentists and other professional men ran certain risks which resulted in moral and material damage. Men who were exposed to these dangers recognized that only by organization could they successfully combat them. In no sense would the institution be a trade union, but simply an institution to defend the members against loss and hardship.

Mr. Horace Taylor (sec. pro tem.) explained the steps that had been taken to bring the movement under the notice of the profession, and exhibited some 500 letters which he had received from all parts of the State in congratulation and support of the proposal.

Mr. Ernest Blackwell moved "That this meeting is of opinion that it is desirable to form a Dental Defence Association, having for its objects—

(a) To render assistance to any member who may be threatened with or involved in any action at law or prosecution arising out of the practice of his profession within this State.

(b) To assist in any movement which will promote fraternity amongst the members or elevate and improve the social and legal status of dentists.

(c) Promotion of the welfare of the dental profession of New South Wales.

He pointed out that similar institutions existed in all the other Australian States, and in other professions in this State.

Mr. Charles Hodgson, in seconding the resolution, stated that such an institution would have his heartiest support. He had advocated its establishment for years, and pointed out the number of speculative actions which had of late been brought against dentists in which it was found that, in consequence of the impecuniosity of the complainants, the defending dentists, although adjudged to be without blame, were notwithstanding ruined through having to pay their own costs. If these cases had been met with determination at the outset by a powerful association like the one now proposed, these speculative actions would seldom if ever be brought.



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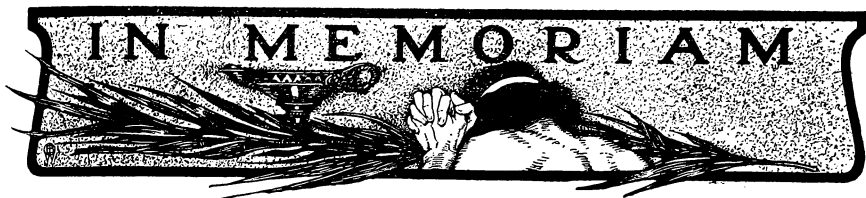
In the discussion much light was thrown upon the practice of blackmail and other evils affecting the dental profession that are going on, and it was shown that dentists often paid lump sums to square unjust claims rather than run the risk of getting their costs in a lawsuit.

The resolution was adopted without dissent.

Dr. Henry Peach moved "That a committee of twelve be appointed to draw up a scheme by which these objects may be attained and report at a future meeting."

The resolution was adopted, the voting resulting in the return of the following gentlemen as members of the committee: Henry Peach, D.D.S., E. G. Moon, Charles Hall, C. C. Marshall, Ernest Blackwell, W. R. Fitzsimons, Stanley Rea, D.D.S., J. E. Forsyth, D.D.S., I. P. Cliff, D.D.S., F. P. Head, Walter Robinson, Edward Reading.





Edward Nelson, D.D.S.

At a special meeting of the Maryland State Board of Dental Examiners held on the 12th inst. the following resolutions on the death of Edward Nelson, D.D.S., of Frederick, Md., were adopted:

Whereas our Heavenly Father in His divine wisdom has seen fit to remove from the sphere of his earthly labors our esteemed friend and brother Examiner, Dr. Edward Nelson, of Frederick, Md., and

Whereas by his death the Maryland State Board of Dental Examiners has been deprived of a valued member:

Resolved, therefore, That in his association with the members of this Board he ever displayed a kindness of nature and generosity of heart which will always be remembered with the warmest affection.

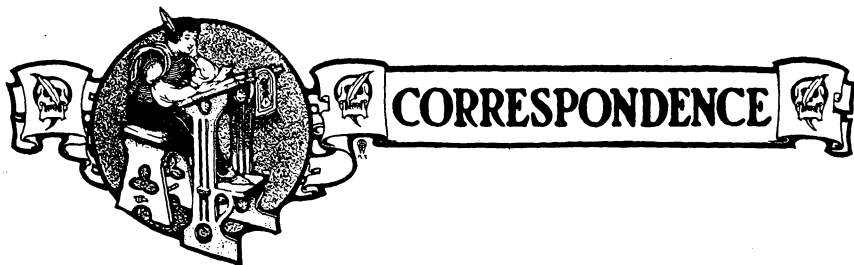
Resolved, That as an examiner he displayed wonderful ability, good judgment and tact in the performance of his official duties.

Resolved, That the Board in special session hereby extends its heart-felt sympathy to his bereaved family in their sad affliction.

Resolved, further, That these resolutions be spread upon the minutes of the Board and published in the dental journals and *Baltimore Sun* and that a copy be forwarded to the family of the deceased.

F. F. DREW, D.D.S., Secretary.





Celluloid.

EDITOR ITEMS OF INTEREST.

The "Celluloid discussion" in ITEMS OF INTEREST does not seem to have been productive of any practical results. When properly manipulated celluloid is much superior to rubber as a base for artificial dentures. The first requisite is a good impression from which a plaster model is made, in the same manner as for a gold plate. Make a mould in moulding sand the same as for a metal die, only that the sand should be a little damper than where zinc is to be used. Have some block tin cut into small pieces, which should be melted in an iron spoon. With a little practice one can "flirt" the tin into the sand mould so as to produce a thin metal shell. This is a much better way than the old-fashioned one of pouring the mould full of tin, then waiting until the outside had become chilled and then pouring out the soft tin in the center. We now have a thin tin cameo of the mouth, which is to be filled with plaster. The necessary bite is raised on this model the same as on a plaster model. In setting up the teeth, pink paraffine is preferable to wax, because it can be made absolutely smooth, and becomes fairly stiff and hard. After the necessary carving of gums and rugae has been done, the surfaces should be made smooth with the gas flame blown upon them with a small jeweler's mouth blow-pipe.

Cover the wax surfaces with heavy tinfoil, but put on with a wad of cotton tied to the end of a burnisher handle. Trim the foil so that it does not cover the teeth in any place, care being used not to cut the foil away from between the teeth. After the foil is well burnished to place and all trimming done, the labial and buccal surfaces should be well stippled, best done with a stiff brush held by the end of the handle in order to get the necessary force for the blow.

Invert the same as an ordinary rubber case, care being taken to keep all plaster from the tin foil. Warm the flask slightly before separating, and there will be little danger of displacing the foil. Remove the paraffine

CORRESPONDENCE

with boiling water and we now have metal for all surfaces with which the celluloid is to come in contact.

In my experience in using celluloid, I have used the Campbell New Mode Heater, and I do not know that it has ever been improved upon. Select a blank, the necessary size, place it in the flask, put the halves together, place the flask in the chamber in the heater and adjust the center screw so as to hold the halves tight. Allow it to remain a few minutes, then turn the steam into the chamber, after making sure that the door is closed tight. The door has a plate glass oval in it and by reflecting the light from a hand mirror into the chamber, one can see every move of the flask. Gradually tighten the screws of which there are four, giving each one a slight turn. When the flask is closed, shut off the steam from the steam chamber, open the door after turning off the gas light, and allow the flask to cool as the heater cools. When cold enough to handle, take the pot of the heater out of the jacket and place it under running water and leave it until absolutely cold. Open the flask, strip off the tin foil, take hold of the hollow tin shell with a pair of narrow flat nose pliers, and it can be easily rolled out.

All the finishing now necessary is along the edges of the plate. In finishing the labial and buccal edges, if any of the stippling is removed, it can be easily reproduced with a small round bur in the engine. Polish the edges with pumice and whiting and then thoroughly burnish them with a vulcanite burnisher or any smooth steel instrument.

We now have a base which is absolutely impervious to the secretions of the mouth, because we have a closed surface caused by contact of the celluloid with the tin. Celluloid was never intended to compete with rubber either in the sense of cheapness nor quickness of making. It really is plastic continuous gum, and when properly worked is almost as artistic. I have seen celluloid plates which were made in the manner I have outlined, that have been worn for fifteen and twenty years and they were as nice looking works of art as when they were made. The method I have outlined is utilized in connection with what are known as celluloid teeth, which are somewhat similar to continuous gum teeth. In using block teeth, a little more time and care are needed in closing the flask, and no stippling of the gum portion is required.

DR. THOMPSON.

Newark, N. J.

EDITOR ITEMS OF INTEREST.

Twelve years of the use of celluloid for dental purposes taught us some of its merits and demerits. Why the material for dental plates fell

ITEMS OF INTEREST

into disuse we could never understand, for it certainly possesses many of the requisites of a first class dental plate. We believe that it met condemnation mainly from the fact that those who experimented with it did not **push** the use of the material far enough to find out its peculiarities, and **thus** overcome its most prominent defects; and again, because it cannot be worked as easily as rubber; hence they condemned it too soon. A recent writer in *ITEMS OF INTEREST* thinks it lacks the strength of rubber. We found it the exact opposite of this, and in the twelve years' use of the same had but one broken plate returned to us for repairs and that was in a full upper denture, cracked between the centrals, a point where rubber most frequently shows defects and weakness. We never had a plate returned broken by dropping, as we so often did when using rubber. Tested in many ways we found it not lacking in strength. In partial sets, a tooth standing alone may sometimes be broken off, the same as in rubber. As to blocks or sections of teeth being displaced by the celluloid flaking off, it never occurred with us as it did with the writer who questions its strength. He also speaks of having to pad the gums in one case, wetting the pieces with spirits of camphor, and says that these added portions afterwards separated. This fault we never could satisfactorily overcome ourselves and count it one of the defects of the material.

Many complained of its shrinkage and on this account said their plates did not fit. Our experience was that we could make a better fit with celluloid than we could with rubber. We made the matter of shrinkage a study and found the cause of it, and then overcame it entirely. Celluloid is a material that readily flows under pressure, when heated to a certain extent. It can be made to copy a hair line, but to do this, the pressure must be gradually applied, and the pressure kept constant till the result is attained. It cannot be forced quickly. To illustrate this, strike a ball of putty with a hammer and the soft substance resists the blow. Take the same hammer and apply steady pressure, and note the result. It will flow to a thin wafer. Just so with celluloid. Just here comes in another very interesting characteristic of the material, viz.: its tendency to crawl back to something of its original form, when pressure is released too soon. This is very readily overcome by not releasing the pressure until that tendency has disappeared. We overcame it in this way. After our day's work was done at the chair, we put our plates to press and did not release them under twelve hours, or until next forenoon. Our plates never shrunk and did not cause us any trouble in this direction. We noted this fact very distinctly in a number of cases where temporary plates after being worn a year or more required to be changed. In taking the teeth from the plates, oiling and then heating, not a particle of debris could be found behind either a single tooth or a gum section.



CORRESPONDENCE

Anyone who has ever taken teeth off an old rubber plate has noticed the contrary to this. When it is considered that the plaster model on which a celluloid plate is pressed, does not crystallize, as it does in vulcanizing, the reason for non-shrinkage is evident. Have no fear of shrinkage, unless you open your flask too soon. We often hear complaints of plates coming out porous. This comes from not keeping the pressure constant whilst closing the flask, as the celluloid flows under heat and pressure. Unless the latter is kept constant, the camphor escapes, and this causes the porosity. It is easily avoided. As to the fading and wearing away complained of by many, it results from at least two causes. First, in faulty blanks as furnished by the manufacturers; and, second, in faulty manipulation. Overcome the first by selecting good blanks and the second by care in working same.

We overcame the latter in this way. Experience soon taught us that in waxing up a case care should be used in not making the plate too thick nor too heavy on the alveolar borders. If so, the plates come out too heavy and necessitate much trimming to remove the excess material. We soon observed that the surfaces next the model and also the investment in the flask were much firmer and harder than the inner layers, hence the less surplus material the better.

Another cause of too thick plates was this. Many cut gates for the outflow of the surplus celluloid, the same as they did for rubber cases. This will prove a failure every time, for the reason that the surplus will not readily flow out of these gates. Result: a thick plate and teeth too long when placed in the mouth. Cut no gates but trim off the plaster, all round to the edges of the flask; wedge-shaped, thin edge next the alveolar borders and thicker at the flask edge; then your excess will flow out in the shape of a thin wedge-shape flange all round, and the plate will be no thicker than was intended. You will have a thin, hard-surfaced plate that will not wear readily, does not lose its pink color easily and does not yield a camphor taste or odor.

The one great fault of celluloid as we have found it is in the blanks. No manufacturer has as yet put the right kind on the market. They are faulty, very faulty in shapes, and often doubly so in the material of which they are made. In nearly every case we modified the shapes by dressing with files to suit the case in hand.

To sum up we can most heartily recommend celluloid as the best moulded plate that was ever used in the hands of those who will treat it properly, and make a thorough study of its characteristics. Let no one hope to succeed with it who will not devote time and patience in the use of it.

W. H. H. BARKER, M.D., D.D.S.

Chicago, Ill.





SOCIETY ANNOUNCEMENTS

National Society Meetings.

National Dental Association, Asheville, N. C., July 28.

National Association of Dental Examiners, Asheville, N. C., July 24, 25 and 27.

National Association of Dental Faculties, Asheville, N. C., July 23, 24.

Interstate Dental Fraternity, Asheville, N. C., July 28.

State Society Meetings.

Indiana State Dental Association, Indianapolis, June 30, July 1, 2.

Maine Dental Society, July 21, 22, 23, Kineo, Moosehead Lake.

Michigan Dental Association, Petoskey, July 7, 8, 9.

Minnesota State Dental Association, Minneapolis, Sept. 1.

New Jersey State Dental Society, Asbury Park, July 15, 16, 17.

Ohio State Dental Society, Columbus, Dec. 1, 2, 3.

Pennsylvania State Dental Society, Harvey's Lake, July 7, 8, 9.

Tennessee Dental Association, Chattanooga, July 23, 24, 25.

Virginia State Dental Association, Hot Springs, July 22-24.

Wisconsin State Dental Society, West Superior, July 21-23.

National Association of Dental Faculties.

The National Association of Dental Faculties will convene in the ballroom of the Battery Park Hotel, Asheville, N. C., July 24, 11 a. m.

The Executive Committee will meet at same place Thursday, July 23, at 2.30 p. m. All parties having business with this committee are hereby notified to be on hand at this time.

S. W. FOSTER, Sec'y. Ex. Com., N. A. D. F.

H. B. TILESTON, Chairman.



National Dental Association.

Following is a partial list of clinics promised for the coming meeting in Asheville, N. C.

An excellent list of papers is being prepared by the various sections. From the preparations that are being made, the coming meeting will be an unusually interesting and profitable one.

A. H. PECK, Rec. Sec'y.

L. G. NOEL, Pres.

CLINICS.

1. Dr. Levi C. Taylor, Hartford, Conn., "Hygienic Fillings."
2. Dr. S. Eldred Gilbert, Philadelphia, Pa., "Sharp Seamless Crown Outfit."
3. Dr. R. C. Brophy, Chicago, Ill., "Something in Porcelain Work."
4. Dr. Garrett Newkirk, Los Angeles, Cal., "Advantages of the Hollow Post Combined With the Inlay Principle for Cantilever and Bridge Abutments."
5. Dr. D. O. M. Le Cron, St. Louis, Mo., "Modern Porcelain Art, and Oil Colors, as Applied to Dental Prosthesis."
6. Dr. Wm. H. G. Logan, Chicago, Ill., "Pyorrhea Alveolaris."
7. Dr. Howard T. Stewart, Memphis, Tenn., "Partial Removal and Decalcification of Cementum in Treatment of Riggs' Disease."
8. Dr. F. Lee Hollister, Wilkesbarre, Pa., "A Demonstration of the Application of Dr. Edward H. Angle's Fracture Bands in Fractures of Maxillae, Superior and Inferior."
9. Dr. Geo. Evans, New York, "The Cementation of Crowns and Bridges with Gutta Percha Cement."
10. Dr. J. H. Feagan, Spartanburg, S. C., "Demonstrating the Advantages of an Improved Flask in Investing and Packing Vulcanite Dentures."
11. Dr. Robert J. Cruise, Chicago, Ill., "Administration of Nitrous Oxide With a New Nasal Inhaler."
12. Edwin C. Blaisdell, D.M.D., Portsmouth, N. H., "The Use of Non-Cohesive Gold."
13. Dr. Russell Markwell, Galveston, Texas, "Porcelain Crowns."
14. Dr. Paul W. Evans, Washington, D. C., "Specimens of Porcelain Work and a Method of Making Seamless Gold Shell Crowns."
15. Dr. F. J. Capon, Toronto, Canada, "Porcelain Crowns, Sections and Inlays."
16. Dr. Alfred Owre, Minneapolis, Minn., "Cavity Preparation in Natural Teeth."



ITEMS OF INTEREST

17. Dr. Burton Lee Thorpe, St. Louis, Mo., "A Method of Protecting the Cervical Margin in Cement Fillings."
18. Dr. D. J. McMillen, Kansas City, Mo., "Combination Cohesive and Non-Cohesive Gold."
19. Dr. H. Herbert Johnson, Macon, Ga., "An Improved Modification of the Richmond Crown."
20. Dr. R. Ottolengui, New York, "Models and Appliances Representing Artificial Vela and Obturators for Cleft Palate Cases."
21. Dr. Wm. Leon Ellerbeck, Salt Lake City, Utah, "Porcelain Fillings and Furnace Construction."
22. Dr. Chas. P. Pruyn, Chicago, Ill., "Root Canal Filling, Using Sandarac Varnish and Gold Wire Points."
23. Dr. Hart J. Goslee, Chicago, Ill. To be announced.
24. Dr. Rudolph Beck, Chicago, Ill. To be announced.
25. Dr. Wm. Reeves, Chicago, Ill., "Porcelain Inlays."
26. Dr. Joseph Head, Philadelphia, Pa. To be announced.
27. Dr. H. B. Tileston, Louisville, Ky., "Gold Inlay (Using Copper Amalgam Matrix)."
28. Dr. Harry P. Carlton, San Francisco, Cal. To be announced.
29. Dr. W. A. Capon, Philadelphia, Pa., "Porcelain."
30. Dr. L. E. Custer, Dayton, Ohio, "Porcelain."
31. Dr. B. Holly Smith, Baltimore, Md., "Some Novel Attachments for Removable Bridge and Metal Plate Work."
32. Dr. W. E. Grant, Louisville, Ky., "Abutments for Esthetic Crown and Bridge Work."
33. Dr. A. R. Begun, Des Moines, Iowa, "Some New Things in Gold Work."
34. Dr. Emory A. Bryant, Washington, D. C., "Replaceable Facings for Crown and Bridge Work, and Repairs."
35. Dr. Henry C. Raymond, Detroit, Mich., "Porcelain."
36. Dr. Geo. W. Schwartz, Chicago, Ill., "Method for Constructing a Continuous Gum, Upper Set of Teeth. Table Clinic."
37. Dr. C. Edmund Kells, New Orleans, La., will exhibit models showing his method of extracting impacted third molars; he will also give a demonstration in X-Ray work.
38. Dr. Robert E. Payne, New York, "Implantation."
39. Dr. Wm. K. Slater, Knoxville, Tenn., "Porcelain Work."
40. Dr. Thos. P. Hinman, Atlanta, Ga., "Porcelain Inlays."
41. Dr. C. L. Alexander, Charlotte, N. C., "Gold Inlays."
42. Dr. J. Y. Crawford, Nashville, Tenn., "Oral Clinic on the Management of Children's Teeth; Also on Management of Mouths of Very Aged People."



The National Association of Dental Examiners.

The National Association of Dental Examiners will meet July 24 at Asheville, N. C. The meetings will begin at 10 a. m. and last three days and will be held at the Battery Park Hotel, where a rate of three dollars per day has been secured. Compliance with the following resolution at Niagara Falls in 1902 is requested:

Resolved, That each Board of Examiners, member of the National Association of Dental Examiners, furnish and present through its representatives, at the annual meeting of 1903, the records and votes of candidates for examination, graduates from recognized dental colleges, who have taken their examinations during the year, and whose marks indicate a lack of proper dental education. It is important that every State be represented at the meeting, as a number of questions of importance to the dental profession must be settled.

J. P. ROOT, D.D.S., Sec'y.

National Dental Association, Southern Branch.

There will be a business meeting of the Southern Branch of the National Dental Association in the ball-room of the Battery Park Hotel, Asheville, N. C., immediately on adjournment of the national body, at first morning session Tuesday, July 28. The object of this called meeting is to consider the election of officers, time and place of holding the next regular meeting, reception of delegates to this meeting of the national and the disposal of other matters of business pertaining to the branch.

L. G. NOEL, President.

S. W. FOSTER, Sec'y S. B. N. D. A.

Interstate Dental Fraternity.

The first annual banquet of the Interstate Dental Fraternity will occur during the time of the meeting of the National Dental Association at Asheville, N. C., the exact time to be arranged so as not to conflict with any of the sessions of that body. To this end the officers of the Interstate Dental Fraternity, constituting the Board of Governors, are hereby notified to attend a meeting to perfect arrangements early on the morning of July 28.

R. M. SANGER, Sec'y.





New Jersey State Dental Society.

The thirty-third annual session of the New Jersey State Dental Society will be held in the Auditorium, Asbury Park, commencing on Wednesday, July 15, at 10 o'clock a. m., and continuing 16 and 17. Four good papers will be read by prominent members of the profession and special energy displayed, as was last year, in bringing before the dentists everything new and novel in clinics, together with an array of exhibits that will make apparent the advances in this line by a year's efforts. The Auditorium is the largest exhibit hall in the State and all space is, at the present writing, nearly taken. The Columbia Hotel will be the headquarters and the rate will be \$2.50 and \$3.00 per day. Mark these dates off now.

CHAS. A. MEEKER, Sec'y.

29 Fulton street, Newark, N. J.

Maine Dental Society.

The thirty-eighth annual meeting of the Maine Dental Society will be held at Kineo, Moosehead Lake, July 21, 22 and 23, 1903. This is an ideal opportunity to visit this beautiful spot, the most attractive summer resort in the State. All dentists are cordially invited to meet with us, and we especially extend an invitation to those who are natives of Maine to participate in a pleasant and profitable reunion. We are to have papers and clinics by men of national reputation, including Dr. L. P. Haskell, of Chicago, Dr. W. A. Capon, of Philadelphia, and Dr. R. Ottolengui, of New York. The Mount Kineo House accommodates five hundred guests and grants us half rates on this occasion. Reduced railroad rates from Portland.

Dexter, Me.

C. H. HAINES, Ch'man Ex. Com.

Indiana State Dental Association.

The forty-fifth annual meeting of the Indiana State Dental Association will be held at Indianapolis, June 30, July 1 and 2, 1903. Indiana extends a cordial welcome to the profession.

Rushville, Ind.

R. F. McCLANAHAN, Sec'y.



Tennessee Dental Association.

The next meeting of the Tennessee Dental Association will be held at Lookout Inn, Chattanooga, Tenn., July 23, 24, 25, 1903. The outlook is bright for the best meeting in the history of the Association. Contributions have been promised from many eminent men in the profession, from Tennessee and other States. A one and one-third fare rate on the certificate plan has been secured. Those wishing to attend the meeting of the National Dental Association at Asheville, N. C., can deposit return ticket with agent at Chattanooga and take up same on return trip. All members are urged to be present and a cordial invitation is extended to all ethical dentists to be present and take part in the proceedings. The Tennessee State Board of Dental Examiners will hold its meeting at the same time and place.

A. SIDNEY PAGE, Sec'y.

Columbia, Tenn.

Michigan Dental Association.

The forty-seventh annual meeting of the Michigan Dental Association will be held in Petoskey July 7, 8 and 9, 1903. Come to Petoskey and spend your vacation on the above dates.

F. H. ESSIG, Sec'y.

Dowagiac, Mich.

Pennsylvania State Dental Society.

The Pennsylvania State Dental Society will hold its thirty-fifth annual meeting at Harvey's Lake, on July 7, 8 and 9, 1903.

Wisconsin State Dental Society.

The thirty-third annual meeting of the Wisconsin State Dental Society will be held at West Superior, July 21-23, 1903. An interesting programme is being prepared. Members of the profession are cordially invited.

W. H. MUELLER, Sec'y, Madison.

T. M. WELCH, Pres.





Virginia State Dental Association.

There will be a meeting of the Virginia State Dental Association at Hot Springs, Va., July 22-24, 1903. F. W. STIFF, Chairman.

New Jersey State Board of Registration and Examination in Dentistry.

The New Jersey State Board of Registration and Examination in Dentistry will hold their semi-annual examination on Tuesday, July 7, Wednesday, 8, and Thursday, 9, 1903, at the Assembly room of the State House at Trenton, N. J. Sessions begin promptly at 9 a. m. All applications must be in the hands of the secretary ten days prior to the examination.

J. ALLEN OSMUN, Sec'y.

588 Broad St., Newark, N. J.

Vermont State Board of Dental Examiners.

The Vermont State Board of Dental Examiners hereby give notice that they will meet at the Paviion Hotel, Montpelier, on Tuesday, July 14, 1903, at 2 o'clock p. m., for the examination of candidates to practice dentistry. Application blanks together with rules and instructions to candidates can be had by applying to the secretary. Applications with the fee, ten dollars, must be filed on or before July 5, 1903.

St. Johnsbury, Vt.

GEO. F. CHENEY, Secy.

Institute of Dental Pedagogics.

At the last meeting of the Institute of Dental Pedagogics held in Chicago December 29, 30 and 31, 1902, the following officers were elected for the ensuing year: President, J. D. Patterson, Kansas City, Mo.; Vice-President, H. B. Tileston, Louisville, Ky.; Secretary-Treasurer, W. Earl Willmott, Toronto. Executive Committee: W. H. Whitslar, Cleveland, Ohio; D. R. Stubblefield, Nashville, Tenn.; R. H. Nones, Philadelphia, Pa.

The next meeting will be held at Buffalo, December 29, 30 and 31, 1903.

Those having new teaching appliances which they wish to bring before the Institute will communicate with Dr. Wm. G. Foster, Baltimore, or Dr. L. S. Tenney, Chicago.



Arizona Board of Dental Examiners.

At the last meeting of the Board of Dental Examiners of Arizona the following officers were elected: Wm. G. Lentz, D.D.S., president, Phoenix; J. L. Hamilton, D.D.S., secretary-treasurer, Phoenix; Ralph Roper, D.D.S., Prescott; Frank M. Metzger, D.D.S., Prescott; Edward H. Stiles, D.D.S., Tucson. The next meeting of the Board will take place in December. For particulars apply to secretary.

WM. G. LENTZ, Pres., Phoenix.

J. L. HAMILTON, Sec'y, Phoenix.

Idaho State Board of Dental Examiners.

The Idaho State Board of Dental Examiners will meet in Boise, October 12, 1903. Examination fee, \$25.00. For full particulars address the secretary.

W. W. PALING, Sec'y.

Mackey, Idaho.

Ohio State Board of Dental Examiners.

The Board of Dental Examiners of the State of Ohio will meet at the Hartman Hotel, Columbus, June 30, July 1 and 2, for the purpose of examining candidates for certificates of registration.

All applications should be filed with the secretary by June 20.

For further particulars address

112 East Broad St., Columbus, Ohio.

H. C. BROWN, Sec'y.

Dental Society of the State of New York.

At the annual meeting of the Dental Society of the State of New York held at Albany, N. Y., May 13 and 14, 1903, the following officers were elected for the coming year: President, R. H. Hofheinz, Rochester; Vice-President, W. J. Turner, Brooklyn; Secretary, W. A. White, Phelps; Treasurer, C. W. Stainton, Buffalo; Correspondent, A. R. Cooke, Syracuse.

W. A. WHITE, Sec'y.

Phelps, N. Y.





Illinois State Dental Society.

At the thirty-ninth annual meeting of the Illinois State Dental Society, held in Bloomington May 12 to 14, the following officers were elected: President, F. H. McIntosh, Bloomington; Vice-President, C. C. Corbett, Edwardsville; Secretary, Hart J. Goslee, Chicago; Treasurer, C. N. Johnson, Chicago. Executive Committee, F. B. Noyes, Chicago. Supervisor of Clinics, C. E. Bentley, Chicago. Committee on Science and Literature, G. V. Black, Chicago. Committee on Art and Invention, J. H. Prothero, Chicago. Librarian, J. T. Cummins, Metropolis City. Members of Executive Council (3 years), A. H. Peck, Chicago; G. W. Dittmar, Chicago, and W. A. Johnston, Peoria.

The fortieth annual meeting will be held in Peoria the second Tuesday in May, 1904.

HART J. GOSLEE, Sec'y.

Texas State Dental Association.

The Texas State Dental Association held their twenty-third annual session in the city of Houston May 14 to 16, 1903. The meeting was a largely attended and very profitable one. The following visitors from other States were present: Drs. J. P. Gray of Nashville, Wm. Crenshaw of Atlanta, W. M. Bartlett of St. Louis, Robert Le Cron of St. Louis, and C. B. Lukens of St. Louis. The following officers were elected: President, Dr. Thos. P. Williams, Houston; First Vice-President, Dr. Sam G. Duff, Greenville; Second Vice-President, Dr. W. R. Rathbone, Cuero; Secretary and Treasurer, Dr. Bush Jones, Dallas; Curator of Museum, Dr. A. F. Sonntag, Waco. Executive Committee: Chairman, Dr. A. J. Beville, Waco; Dr. C. O. Webb, Crockett; Dr. Chas. H. Edge, Houston.

The next meeting will take place in Corsicana, Texas, in 1904.

